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Published Monthly at Indianapolis, Indiana

Vol. III, No. 12 OCTOBER, 1927 $1.00 a Year

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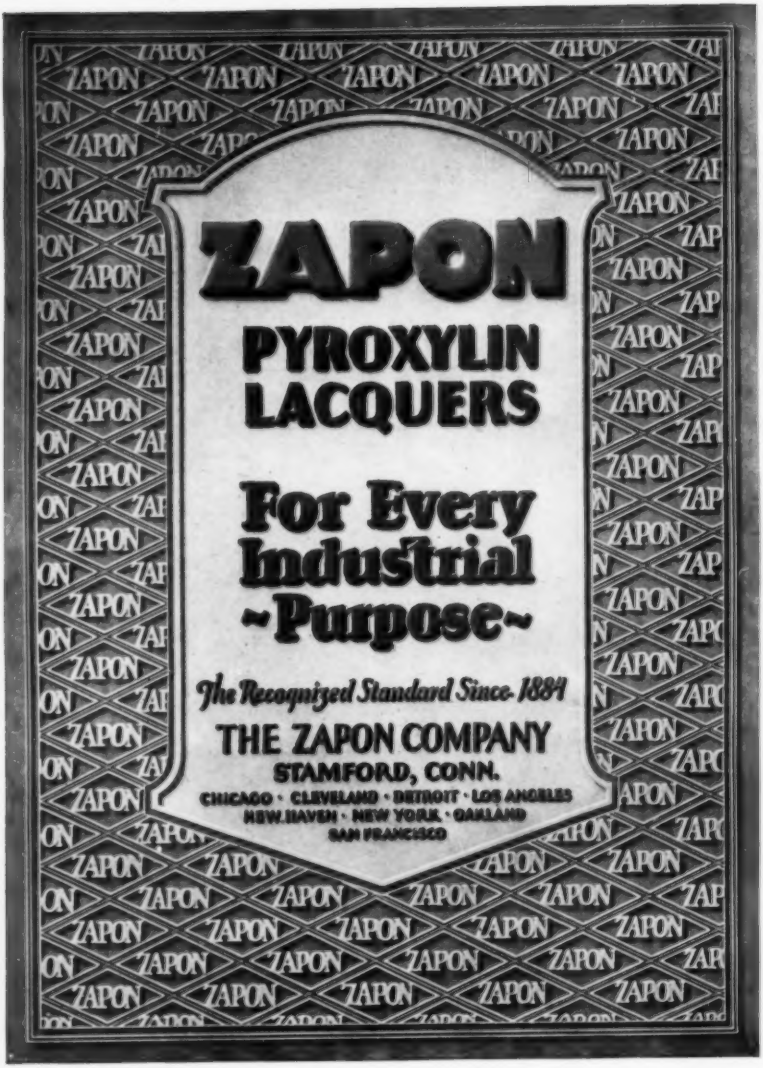
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Industrial Finishing

An Independent Publication Devoted To The Finishing of Industrial Products

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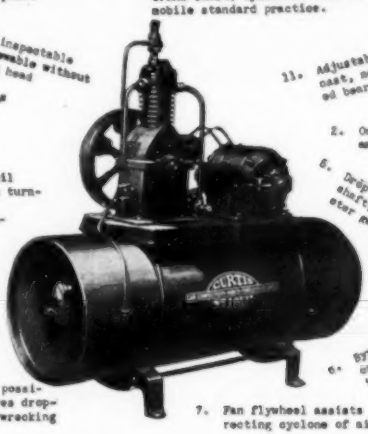
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With the Editor

THIS, the October issue of INDUSTRIAL FINISHING—Vol. III, No. 12—rounds out three years of service to the industry. Working under various handicaps here, we have probably made some mistakes of commission and omission, but in the main there is abundant evidence to show that INDUSTRIAL FINISHING'S service has been effective and that its value and prestige are increasing.

We appreciate the splendid co-operation of numerous individuals and firms in the industry who, through their encouragement and help, have contributed largely toward making INDUSTRIAL FINISHING what it is today. The progress that has been made enables us now to go a step further.

It is a pleasure, therefore, to announce at this time that we have been able to make some changes and improvements here in the organization, whereby both the editorial and advertising service is substantially strengthened in effectiveness. We are also acquiring added facilities and moving into larger quarters, our address being changed from 603 to 802 Wulsin Building, 222 E. Ohio St., Indianapolis, Ind.

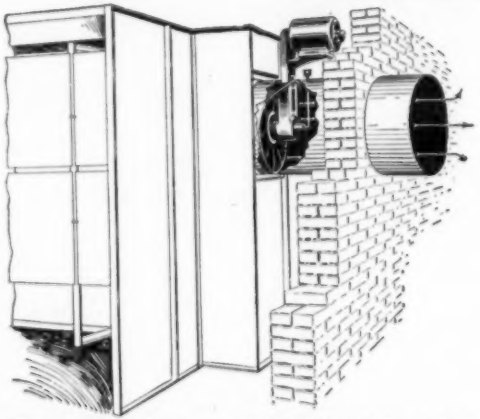
This is in line with our policy of continual improvement in order to afford better service to manufacturers, distributors and users of industrial finishing materials, supplies, and equipment.

W. H. Rohr

Managing Editor

What it means to you

to use DeVilbiss spray-finishing equipment



DeVilbiss Spray Booths are easily installed at the best point in the finishing room, considering convenience and lighting conditions...Exhausting is done from back, top, or either side (here illustrated) through the shortest possible outlet pipe.

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Consider the full value of such experience and production facilities to you.... DeVilbiss spray-finishing equipment enables you, with absolute certainty, to do an improved quality of work—to do faster work—to have the best possible working equipment and working conditions—to have better satisfied workmen.

Further facts about DeVilbiss equipment and organization, and what they offer to you, will be gladly sent. Address—

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"I trust you will be able to see the point of this article, which is necessarily rather compact and suggestive rather than severely specific. The article is an attempt to stimulate users to greater and more appreciative interest in compressed air. With compressed air costs reduced to what they should be, by efficient and careful production, this sort of power would take the place it deserves."—

R. B. Prentice

Compressed Air and Its Distribution

Presenting in a new light, certain facts about compressed air, its power and adaptability to usefulness in the modern industrial plant

By R. B. Prentice

THE merit of compressed air as a medium for the transmission of power has received insufficient consideration by a great many users. That air-driven machines in present use are so efficient in their field, as compared with machines otherwise powered, is regarded more as evidence of the utilization of a conveniently available means for accomplishing certain work, than as a genuine recognition and development of a superior power—transcending, if you please, the ultimate conceivable excellence of electricity for these uses, and probably many other uses.

Since nothing has been devised thus far to supplant the judgment of man in controlling the application of power, man and his physical capabilities must be the base in comparison with which all equipment should be apportioned. Or, stated in another way, the capacity for work per pound of weight of a machine intended for portable use, is the measure of efficiency of that machine.

Portability and Weight

The practicability of "bringing the machine to the work," depends upon the clumsiness of the machine. Compare the weights of an electric motor of any given power, and an air-using device of the same power. Exchange the light, compact body of a pneumatic rubbing machine for a 2½-h.p. electric motor.

In the light of what these remarks suggest, is there any sound reason why the problems presented by compressed air equipment should not be attacked with more a spirit of determination than toleration? Compressed air provides the operator with plenty of power at his finger tips. Horsepower on the job is what tells the story; give every air machine all the air it wants—a better investment would be hard to find.

Besides being of ample volume, compressed air must be clean and dry; some of it may be used in the spray gun and duster, some in rubbing machines, some in routers, etc. To enjoy the econ-

omies of the use of compressed air the installation must be carefully planned, as there are many leaks of power in a compressed air system other than holes in the pipe lines. It is the purpose of this article to indicate these leaks and suggest means for stopping them.

Power Requirements

A furniture plant with which the writer is quite familiar affords a good foundation upon which to base some constructive comments. In this establishment electricity is generated from wood refuse, etc., in a steam plant wherein a turbo-generator is used. Some of the electric current is used to drive several compressors. Fundamentally this is bad practice. Assuming that each machine from the steam turbine on, has an efficiency as high as 85 percent, the efficiency of producing compressed air is already very low without considering any heat or transmission losses in the compressed air system itself.

The pneumatic rubbing machine is small and comparatively light in weight.

First of all, the turbine converts into mechanical energy 85 percent of the energy of the steam supplied. Secondly the generator converts 85 percent of the mechanical energy thus produced into electrical energy, a value now of 68 percent. Thence a power line loss of 5 percent, making the energy now 64 percent; thence through the motor which is 85 percent efficient bringing the value down to 55 percent; thence through the compressor which has a volumetric efficiency of 85 percent, making a grand total of energy converted into compressed air of some kind, of only 47 percent—to say nothing of the cost of this equipment which wears itself out as quickly as any other machinery.

More Direct Drive

Making the same efficiency allowance for a tandem steam driven compressor (which is fair), note the comparison of output of compressed air with the same steam consumption: the engine at 85 percent and the compressor at 85 percent give us an output of 68 percent in compressed air, as against 47 percent by the other method, to say nothing about the amount of machinery in operation and space occupied to produce it. As a result there is an increase in output of compressed air of nearly 45 percent!

Air Pressure

In this plant a pressure of about 125-lbs. is sought to be maintained in the air system, while 100-lbs. would be ample for any machine. This again is a distinct loss of power; the volumetric efficiency of the compressors drops off with increased pressures, and the heat losses rise

in proportion. In point of fact more than 60-lbs. pressure at the machines where the air is consumed is a rare occurrence; this points to poorly proportioned pipe lines.

In next month's article, I will take up the matter of proper installation and outline the reasons for the choice of method and equipment.

Candelilla Wax

Chemical experiments, made with the candelilla plant which grows wild upon millions of acres of land in the upper border region of Texas and a large area of Northern Mexico, show that it contains not only high grade wax in large commercial quantities, but it may be made the source of a considerable supply of crude rubber. For more than 15 years the extracting of wax from the candelilla weed has been carried on extensively both in the Big Bend region of Texas and in the states of Chihuahua and Coahuila, Mexico. Several factories for separating the wax from the fibrous parts of the plants are in operation in that section.

The crude wax is of a pale yellowish brown or buff color. In appearance, it closely resembles beeswax, but it is of a much higher grade and serves far more valuable and useful purposes than beeswax. When melted, and even in its raw state, it gives out an odor like that of beeswax. On account of its hardness it takes on a high polish. One of the things remarkable about it is that it has no taste.

When refined the wax is of a grade equal to that of the famous carnauba wax, and is in very large demand for use in various arts and trades. After undergoing the refining process, which makes the product of a lighter shade than in its original state, it is placed in bags of about 100-lbs. each and marketed in that form.

The uses to which candelilla wax may be put cover a wide range. Its hardness makes it an excellent material for the manufacture of the better grade of varnishes, phonograph records, electrical insulation, wood and leather polishes, wood finishing, automobile varnish, linoleum finishing, pharmaceutical articles, waterproofing for paper, leather, cloth or wood; lubricants and candles.

The fact that the oil is partly soluble in alcohol or ether and more or less soluble in turpentine, chloroform and various other chemicals makes it available for use in the manufacture of different commercial compounds. It compounds readily with rubber and rubber substitutes and various oils.—W. D. Hornaday.

A 50-50 mixture of acetone and benzol cleans lacquer brushes.

Du Pont Co. 125 Years Old

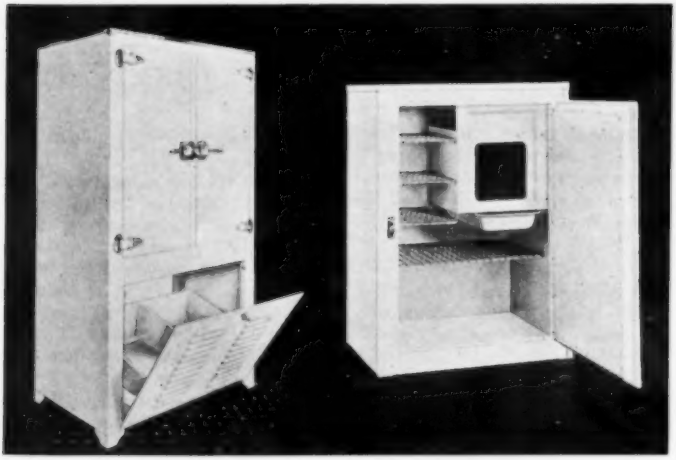
The du Pont Co. this year is 125 years old. In connection with this, the Du Pont Magazine is issuing a special edition which is filled with articles written authoritatively on various phases of the company's business.

Paasche Opens Cincinnati Branch Office

The Paasche Airbrush Co., Chicago, Ill., announces the opening of a Sales and Service Branch at Cincinnati, Ohio, under the direction of Mr. H. H. Evers, Manager.

This branch will be known as the Paasche Airbrush Co. of Cincinnati and will be located at Wade Street, Flint Street and the Southern Railroad.

A complete stock of Paasche air devices, including portable painters, airbrushes, etc., will be maintained at the Cincinnati office.



Lacquer Finished Refrigerators

The following, from the Lacquer Mfg. Service Dept. of The Sherwin-Williams Co., contains technical information of interest to finishers of metal refrigerators and other sheet-metal products

By G. H. Robertson

IN THE PAST few years, due to the introduction of domestic electric refrigeration, great changes have taken place within this industry. Realizing the importance and magnitude of this trade our company carried out a national survey to very definitely determine the finishing requirements of the refrigerator industry. The formulation of finishing materials and individual finishing systems to meet these requirements in the most exacting manner was based upon results and data collected from this survey, together with past experiences we have had with this classification of trade.

This detailed data is available to production men of the refrigerator manufacturers. As each manufacturer has some local condition or special problem to meet that requires individual analysis and treatment, we are merely outlining general facts and figures, particularly relating to this type of finishing for the interest and information of INDUSTRIAL FINISHING readers.

Color, which has been playing an ever increasing part in the finishing of most manufactured products, is now creeping into this industry as well.

Former Finishes

Up until a few years ago the great majority of boxes were finished in a conservative golden oak

Furnished READY TO SPRAY

CLEAR DUCO reaches you ready for use. It is of the exact viscosity for easy spraying.

Clear Duco gives a full body with a smooth flow and has that toughness and durability for which Duco is famous.

And—day after day, month after month, Duco comes to you exactly the same. This uniformity is the result of the rigid chemical control which du Pont maintains over ALL manufacturing processes.

Du Pont offers Duco in Clear, Color and Flat, and also a full line of paints, varnishes and enamels.

DU PONT

Reg. U. S. Pat. Office

E. I. du Pont de Nemours & Co., Inc., Chemical Products Division, Parlin, N. J., Chicago, Ill., San Francisco, Cal., Everett, Mass., Flint Paint and Varnish Limited, Toronto, Canada.

stain. Then came the demand for white enamel; this caused a lot of worry and loss to the manufacturer, retailer and consumer alike, in its first stages. At the time, practically all the boxes were of wood and even today very few manufacturers will finish wooden boxes in either oil or lacquer enamel. In transportation, cracks almost invariably develop and in use, the finish will often peel, because, no matter how well the inner surface is sealed, some moisture gets through and forces the finish off.

The next development was the use of sheet metal attached to a wooden framework. Black sheet iron, galvanized iron, Galvaneel, sheet steel, and lead-coated sheet steel are all used with varying degrees of success. Due to the improper treatment of the metal prior to finishing, many really good finishing materials have been outcast.

Metal Refrigerators

The sheet metal is assembled on a wooden frame which is dipped in spar varnish, or black asphaltum. The metals used are black iron, galvanized iron, Galvaneel, automobile or furniture-type sheet steel, and lead-coated sheet steel. To obtain a satisfactory finished job, the proper pretreatment of the metal is absolutely essential and each variety of metal presents its special problems.

Sheet Metal Cleaning

Black Sheet Iron.—This is perhaps the most dangerous one to use due to the extremely rapid rusting which takes place. As practically every manufacturer who used this material has discarded it, it need not be discussed fully here, except to say that where it is used, unless the surface has been extremely well cleaned and then coated within a few hours, trouble will be experienced.

Galvanized Iron.—While the galvanizing process overcomes the danger of rusting, the grease and acid that remain on the surface are the worst of enemies to any subsequent finishing coat.

1—The surface is carefully washed with benzine.

2—The surface is washed with dilute acetic acid, about the strength of vinegar.

3—A rag dampened with alcohol should be used to give the final wipe-off.

There are, of course, many variations to be used in the cleaning of this metal. In some places a saturated copper-sulphate solution replaces the acetic acid.

Galvaneel.—This metal is a recent refinement of galvanized iron, the development of which was caused by the dangerous finishing surface the regular galvanizing process left. It does not have the smooth, scaly appearance, but is dull and has a somewhat porous surface. Concerns using this material are limiting their treatment to washing with naphtha and are obtaining good results. While its surface is less dangerous to coat over, its porous nature makes it more difficult to obtain a smooth finish. In some cases a surfacer coat is used.

Automobile or furniture-type sheet steel.—The most foolproof method is sand-blasting. This leaves a bright, clean, almost foolproof surface. As this method is costly it is not as generally used as some other methods.

The ordinary method for cleaning this metal is the alkali bath. There are also some good trademarked preparations designed for

One more reason for adopting Berryloid Now
Berryloid is a surprising economy in the finishing room and a powerful factor in the salesroom.
Many manufacturers are breaking down sales resistance and increasing turnover by the simple expedient of adopting this permanent high-luster pyroxylin finish.
The superiority of a Berryloid finish is instantly evident to almost every consumer.
P. S.—90% of the Aircraft Builders use Berryloid.
THE PERMANENT
BERRYLOID
HIGH LUSTER LACQUER
BERRY BROTHERS INC.
Varnishes Enamels Lacquers
Detroit, Mich.
Walkerville, Ont.

this purpose. Usually, in these methods, sheets are successively dipped into three tanks and finally dried. The first tank consists of a boiling chemical solution, the second tank is filled with cold running water and the third is filled with boiling water. Sheets are then dried and finished with the oil primer, not more than four hours after cleaning.

Lead-coated sheet steel.—This seems to be a desirable metal for use in refrigerators. It has a smooth surface and does not rust. It is cleaned by the following method:

1—Washing with naptha.
2—Wet sanded.
3—Washing with vinegar.
4—Dry sanded.
5—Wiped with a rag wet with alcohol.

Due to the lead coating, the baking temperatures are limited to about 180 to 200-deg. F.

The Priming Coat

Wherever possible, the priming coat is applied before assembling. While the usual method of application is spray, in some cases where conditions make it possible, it is dipped. Best results are obtained by the use of a light coat.

Primer should be flexible, and yet adhere strongly to the surface. It should present a smooth surface to eliminate surfacer, particularly where the original sheet metal is smooth, as in many cases the finishing coat of lacquer enamel is applied directly over the primer. It should be nonporous in order to hold out the lacquer. The longer the primer the more durable the finish, therefore every advantage, as to increased temperature or longer baking, should be taken advantage of.

Surfacing

Surfacer is not necessary when the metal is smooth. When it is used, on account of file marks or imperfections, it should be well sanded, only remaining in the places which it was intended to fill. At best, because of the shortness of the material, it weakens the film, and as the proportion of the pigment to vehicle is greater than the primer coat, it does not hold out the finishing coats as well as the primer.

Whether to use lacquer or oil surfacers depends on the conditions existing in the individual plant. If baking equipment is available, oil surfacers should be specified, but in the case of air drying, then lacquer surfacers are recommended. The same applies to the choice between lacquer and oil putties.

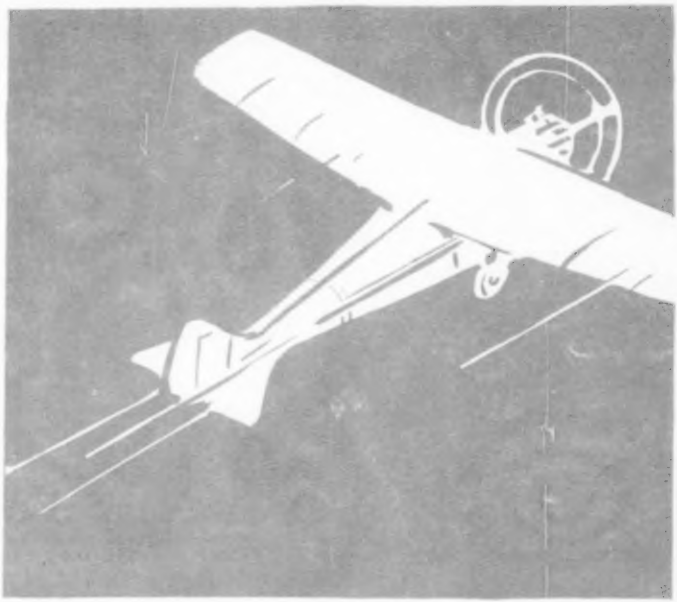
Finish Coat

The quick drying nature of lacquer, as well as its toughness and durability, has been capitalized upon by this industry.

Requirements of Finish

As there has been considerable loss due to the lack of durability in the finish used, naturally the manufacturers are using very severe tests to determine the quality of the finish obtained by any schedule recommended. They lay the greatest stress on the humidity test.

The refrigerator is filled with ice, or, in the case of the iceless type, it is put into operation and placed in a room in which the temperature is controlled at around 120-deg. F., moisture is condensed on the surface and the box "sweats." It is left here for about 15 days and there must be no softening of the finish, or discoloration, either by yellowing or staining from rust. Both the



When It's a Question of Speed

Whenever you have a problem that demands speed—combined with safety and economy—call upon Glidden Service Men. For over fifty years they've been solving finishing problems for manufacturers in every field of industry. ' ' ' Here's valuable experience that they will gladly share with you—an inquiry involves no obligation.

GLIDDEN
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THE GLIDDEN COMPANY · *National Headquarters* · Cleveland, Ohio

THIS drawer and inside finish will help to sell your product—No filling—no sanding—just spray two coats and the job is complete. Feels like velvet—looks like it was oil rubbed.

Dries within one hour.

FLAT OIL FINISH
is made in natural or any color desired.

Advance Paint Co.

Manufacturers of Wood Finishing Materials

Factories: Indianapolis and Evansville, Ind.

Saves more than it costs

Let us show you what a beautiful interior finish this makes by having our special representative demonstrate its wonderful labor-saving and business-building qualities.

primer and lacquer must retain perfect adhesion to the metal.

Interior Finishing

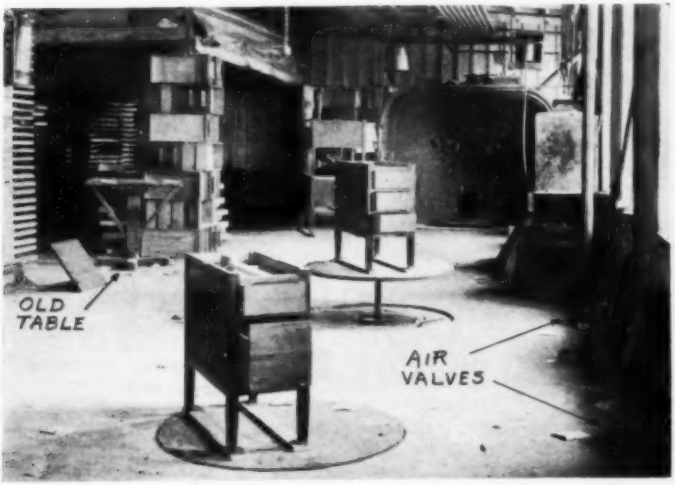
We do not recommend lacquer for the finishing of the interior of refrigerators, as in our opinion there cannot be an absolutely odorless lacquer. Previous experience has proven that although a lacquer may have no residual odor, when confined within a cold damp refrigerator interior, perishable food is subject to contamination where lacquer has been used for finishing the inside of the refrigerators. Oil-base products carry our unqualified endorsement for this purpose.

Standardization is not a finality. Standardization is to be considered permanent only in the sense that constant research reveals no better product.

Finishing Room Work Tables

The photograph accompanying this item illustrates two of a number of working tables operated by air pressure in a desk factory. The purpose of these tables is to elevate the articles to a suitable working height for workmen to perform such operations as sandpapering, touching up, etc.

This concern claims that these air tables or lifts have facilitated the work to a very large extent. There is, of course, nothing especially new about the idea of having lift tables. They have been familiar as part of the equipment of some spraying cabinets for years. They are particularly valuable in the spray booth, for revolving heavy pieces of furniture, so the operator can reach all



Turntables, by which the work is lifted to a convenient height for productive operations.

sides, and also for raising and lowering the object when the top is to be sprayed.

The lift tables are just as valuable outside the spray booths, at many other places in a finishing room. Probably you have noticed that the majority of workmen generally raise the cases they work on to a convenient height. Men are not going to work in a strained bent-over position when they can straighten up, simply by lifting their work up onto a pair of trestles or a bench, even if they have to get somebody to help them do the lifting.

Close examination of the photograph will show a crude pedestal table in the background at the left, beside the stack of drawers. This was the forerunner of the air-operated tables. The old table has only one virtue: It can be revolved. But the work had to be lifted on and off every time a desk was to be worked on.

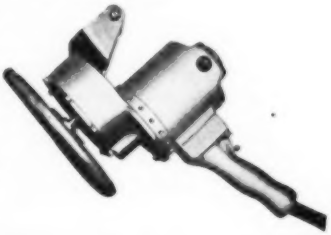
With the new type of lift table, the operator simply steps on an air valve to raise or lower whatever article he has to work on.

The only criticism that can be levelled at these particular tables is that they cannot be stopped half-way up. Their full height above the floor is 30-in. and they must be raised to that height. Then, if a man desires to lower the table to, say, 15-in. above the floor, he must slip a pin through the standard or shaft, which supports the table. Holes are provided for this purpose, and if these holes are placed 3-in. apart on the standard, it will give a very flexible arrangement.

The air chamber in which the raising standard or piston operates, extends below the floor the same distance, approximately, as the length of the standard, but this is not likely to be objectionable unless the factory has very low ceilings.—W. A. Marshall.

New Polishing and Sanding Machine

The accompanying cut shows a new portable, electric sanding and polishing machine, designed to carry sanding discs for sanding wood, metal and finished surfaces and felt discs for cleaning, smoothing, rubbing and polishing finished surfaces. The machine is equipped with a ¼-h. p. univer-



sal motor and can be operated from any electric light current. The abrasive discs used are 9¼-in. in diameter, the felt discs for rubbing and polishing are 8-in. in diameter by ½ and ¾-in. thick. According to the manufacturer, this machine is made especially for automobile paint and body shops, repair shops, boat builders, woodworking shops, etc. It is a product of Nedco Machine Co., 18 Brighton Ave., Boston, Mass.

Marx & Rawolle's Michigan Representative

Mr. E. B. Hawkins, manufacturers' agent, Grand Rapids, Mich., has been appointed to represent The Marx & Rawolle Corporation in the furniture towns of central and southern Michigan. Mr. Hawkins is very well known and has a host of friends in his territory.

Supremacy

Is an easy thing to claim, but not so easy to prove. Now while we don't claim supremacy for our lacquers, we do say that if there are better ones on the market, we've never seen them.

Many manufacturers in the past have thought they were using the best lacquers made. We induced them to give ours a trial, and merit proved out. Today they use Rockford Varnish Company's lacquers.

We ask no odds for our product. Give our lacquers a trial and if they don't prove their superiority, we'll consider the incident closed. It's easy to make a test. Will you write today?

The

ROCKFORD VARNISH

Company

ROCKFORD, ILL.

Face every proposition honestly,
seek the truth, and
profit accordingly

Proper Handling of Complaints—II

An industrial finishing salesman of several years experience, explains what may sometimes cause finishes to go wrong, and suggests mutual co-operation in finding and remedying the fault

By Dan Youngs

THE APPLICATION of finishing materials is a phase with which the human equation is mostly concerned. In shops where the finishers are experienced high-grade men, who know how to handle materials from years of practice, few complaints can be traced to this source. However, the manufacturer makes a certain material to be used in a certain way, and if the finisher deviates from such a way in the slightest degree, there is apt to be trouble.

For instance, let us consider a baking varnish. If the manufacturer says, "Do not bake it at a temperature of more than 150-deg." but in order to expedite production the finisher runs it up to 200-deg., it naturally turns color. For this, the manufacturer cannot be blamed. The methods of application of various finishes are, of course, too varied to go into in detail in this article, but it is a safe rule for the finisher to use the materials as recommended by the manufacturer.

Proper drying is important.

Details of Drying

Drying is perhaps one of the most frequent sources of trouble. In investigating this, particular emphasis should be placed on whether or not the undercoats were dry. The application of any finish over a wet or partially-dried coat will interfere with the drying; this is the case more often than the good finisher realizes. If the product is baked, careful attention should be given to the period of time and heat employed. If it is air dried, differences in temperature, atmospheric conditions or humidity will vary the drying time. This again is not the fault of the manufacturer.

A Word to the Finisher

The question of complaints on any material are of the utmost importance not only to the finisher, but to the manufacturer. You finishers naturally are expected, and want to turn out your work in the most perfect manner possible. On the other hand the manufacturer has studied and is always studying the way to make the best possible materials for each purpose, as in this lies his

Crime Prevention!

It would be a crime to put a finish on this beautiful, well matched table top that would check, flake, or prove otherwise inferior in a short time?

That's the beauty of buying finishing materials that have been made for years and have been thoroughly tried and tested.

RHINO-VAR

INDUSTRIAL VARNISHES

Have been made for over 60 years. You can depend on each Pecora product doing everything we claim for it.

We make a separate varnish for every purpose. Let us make *your* varnish to suit *your* particular conditions.

Pecora Paint Company

3rd and Sedgley Sts., Philadelphia, Pa.

Established 1862 by Smith Bowen Incorporated 1911

success or failure. It is far better for both if complaints are approached with an unbiased mind. The finisher can learn something from the manufacturer, just as it is true that the manufacturer can learn something from the finisher.

Therefore, if complete co-operation is accorded the manufacturer's representative in investigating the complaint, both sides are benefited. It is not sufficient to tell him "the material is no good." Perhaps he has sold or recommended the wrong materials, due to an incomplete understanding of how the materials were to be used. This is especially apt to happen where a salesman has no access to the finishing department, but is obliged to secure his knowledge second-hand through the purchasing department.

Be fair and give the manufacturer the benefit of the doubt until he has had time to investigate and present his side of the question. A friendly attitude on the part of the finisher will be of great aid, whereas a belligerent attitude will only hinder the progress of such investigation as should be made.

A Word to the Salesman

As stated above, the question of the correct handling of complaints is of great importance, to my mind, even more so than the question of sales. There are naturally so many elements involved that sometimes it is difficult and requires considerable time and study to locate the trouble.

If, through a lack of technical knowledge, you are not able to handle the complaint yourself, do not stall; ask your firm to send someone with the proper knowledge and experience to handle the question in a manner satisfactory to both sides.

Meet the finisher with an open mind. Don't act as if your firm could not make a mistake nor send the wrong kind of material. On the other hand, have faith in your firm and don't admit it is wrong unless you are convinced of the fact. If you say the firm is wrong, merely to agree with the finisher, you are doing both an injustice; if some shop condition is responsible, the finisher should be glad to know it.

Above all things, if you make a report to your factory, give them full and complete information. State the kind of material used, each step in its preparation and each step in the finishing process. Get the numbers from the containers, so the firm can check up on the batch.

Make your report so clear that the factory can visualize each step of the operation. Remember that it is important to you from a sales standpoint, to settle each complaint promptly, courteously and cheerfully; if this is done, you will make such a friend of the finisher that you will materially help to keep competition away.

Third Edition Shellac Booklet

Kasebier-Chatfield Shellac Co., 175 Pearl St., New York City, are distributing the third edition of a small booklet which reveals some interesting information on this important finishing material.

Portable Tools Bulletins

Stow Mfg. Co., Inc., of Binghamton, New York, have issued three bulletins—Nos. 200, 250 and 400—which list and illustrate a large number and variety of grinding, sanding, rubbing, buffing, brushing and polishing attachments for flexible shaft operation. Much of this equipment is useful in modern finishing departments.

NIKOLAS LACQUERS

IF you have not seen furniture finished with Nikolas Lacquer you have an agreeable surprise awaiting you.

A lustre equal to the best rubbed varnish with incomparable durability at a lower cost per unit.

G. J. Nikolas & Co., Inc.

1227-35 Van Buren Street
CHICAGO, ILL.

Branches:

33-35 Grand St., Brooklyn
1150 Venice Blvd., Los Angeles
73 Main St., San Francisco

Protective Coating for Airplanes—II

Chief Engineer of The Glenn L. Martin Co. calls attention to problems involved in finishing the metal, wood and fabric portions of modern airplanes and explains how these parts are coated for protective purposes

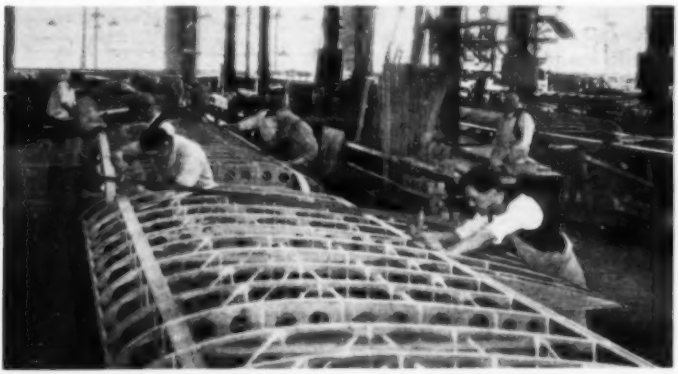
By Lessiter C. Milburn

WHEN FABRIC is employed for covering wings and control surfaces, it is first necessary to tauten the fabric by the application of airplane dope, virtually liquid celluloid. This is done after the fabric has been fitted and sewed in place on the wing frames. Both cellulose acetate and nitrate dopes are used. The acetate dope gives smoother surfaces. It inflames at a higher temperature and burns at a slower rate. Nitrate dope, however, produces superior tautness of the surfaces.

Finishing Fabrics

The first two coats are clear dope and are usually brushed on to insure good penetration into the fabric. The drying time is one-half to three-quarters of an hour per coat. Two additional coats of clear dope are sprayed on with the usual paint spray equipment, using about 90-lbs. pressure and ordinary nozzles. This completes the preparation of the surface and one hour or more is allowed for the first four coats to set. Two or three final coats of pigmented dope are applied to finish off the surface.

Formerly, varnish was applied as a last covering but this practice has been discontinued because it prevents patching of small holes or rips in the fabric, as the patch can not be doped down on the varnish. Furthermore, if the surface is finished with dope without varnish, additional coats of dope can be ap-



Typical wood-wing frame assembly operations under way.

!

A most unique and distinctive finish!

Pioneered as a leatherette finish for radio horns, its variety of attractive combinations has brought it into use for many other articles, such as radio cabinets, furniture, fixtures, novelties, toys, etc.

Ease of application—uniformity of pattern—combinations to suit your particular requirements, are outstanding qualities of BREVOKRAK.

Thorough-going demonstration made at your plant if desired.

!

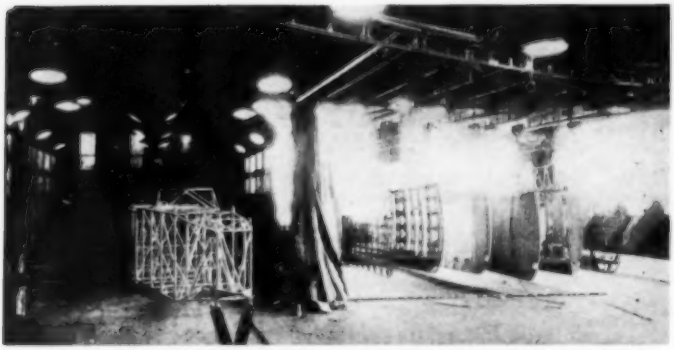
WAUKEGAN CHEMICAL COMPANY

"Values That Endure"

WAUKEGAN, - ILLINOIS

Northwestern Representative
CAPSER LABORATORIES
611 Ryan Bldg., St. Paul, Minn.

BREVOLITE lacquers and lacquer enamels for the wood finishing trade are hard wearing, good covering materials.



A view in the finishing room showing, at left, one of the spray booths and, at right, some of the overhead carrier trackage.

plied later as required to keep the surface smooth and taut.

The pigment used is usually selected with a view of shutting out the actinic or ultra-violet rays of sunlight. These rays quickly break down the somewhat unstable composition of the dope, setting free minute quantities of the acetic or nitric acid radical with bad effects on the fabric and the tautness of the dope itself.

Aluminum pigment is excellent for the purpose. Khaki and yellow pigments are also used for the same purpose and to render the plane difficult or easy respectively to recognize from above, for military reasons. General purpose planes are pigmented in various colors, the wings most frequently in the lighter colors.

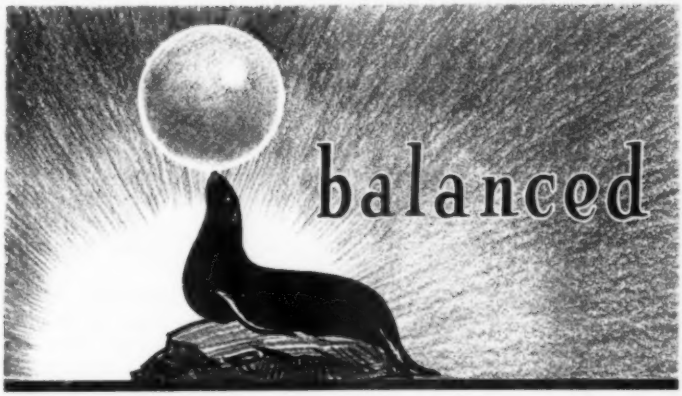
Cloth covered bodies are finished in the same manner as wings and control surfaces. In some cases, where canvas is used to provide a better wearing surface for dirt, gravel and general scuffing, it is necessary to apply one or two additional coats of dope to obtain a smooth, taut surface.

Special Problems Involved

Airplane finishing involves some special problems, such as the baking of aluminum alloy castings in sodium silicate to render them gasoline tight. Engine cowling, which must be frequently cleaned, is often finished in enamel to permit washing with gasoline. Precaution must be taken to use an enamel which is not affected by the chemicals used in gasoline to prevent detonation. Parts which are to be assembled in contact with doped fabric are coated with a special "dope-proof" paint, because ordinary paints are softened by the dope-solvents such as butyl alcohol and acetone.

Instrument boards are often finished in black crackle finish to prevent reflection in the pilot's eyes. Other parts in the cockpits and passenger compartments are finished with the idea of decoration in much the same manner as motor-boat or automobile interiors.

Parts of the plane which will have gasoline or oil splashed on the surfaces, are finished with



Balanced Finishing Reduces Overhead

UNBALANCED finishing of wood products may be the result of many things—materials not suited to the work, improper combinations of different products, poor timing, mediocre designing and lack of knowledge in application.

The result of unbalanced finishing, however, is always the same—a product that is not "right", few sales and loss of good will and prestige.

Balanced Finishing, as conceived by the Wood Finishing Engineers of our Studio Service, embraces everything that happens to your products after they are ready in the white. Balanced Finishing means designing, color schemes, finishing room routine and schedules, various finishing materials, and methods of application—for the sole purpose of producing finishes that possess popular appeal, and help sell furniture; finishes that can be handled in the most economical manner, on a systemized basis, without grief or comebacks.

Gravarco Products

We are now rendering this service for many furniture manufacturers. A request will bring our detailed plan suited to your particular needs.

GRAND RAPIDS VARNISH CORPORATION

Grand Rapids, Michigan

enamels suitable to resist this treatment.

Instrument dials, control handles and similar items are usually marked with "radium" paint for visibility at night.

In some cases special colors have been used on the rear faces of propeller blades to prevent reflection at night or when flying away from the sun. A dull maroon has proven best for this purpose.

Blister paint is sometimes used on engine cylinders, to assist in locating overheating of high power experimental engines.

In some cases the bottoms of wood hulls or pontoons are coated with anti-fouling paint to prevent trouble from barnacles or the more destructive torpedo.

Problems of Design

At the present stage of development, airplane designers have a very serious purpose in finishing, and a great deal more attention is paid to protection of the various parts than to appearance or decoration. The planes are literally exposed to the elements throughout their life. Almost every part of an airplane must take a share in the work and activity of the machine. Each unit is designed to adequately carry its loads but no excess material is permitted, and for this reason it is of primary importance to preserve all parts of the plane in good condition.

No doubt when the protection problems have been definitely conquered, much attention will be paid to artistic appearance, and justly so because of the exalted place which the airplane will presently occupy in the development of human activity. Mother Nature, it appears, has pointed the way in this matter and reserved the most pleasing and brilliant color effects for the creatures of the air.

Industrial Finishers of To-day

Finishers in industry to-day differ somewhat from the finishers of the past—just as modern finishes are different from past finishes.

Since the introduction of spraying, rubbing and dipping machines, the modern finisher must adapt himself to up-to-date methods to be a successful finisher. We now have the shading, highlighting, two-toning finishes, etc.; also a new era in the finishing material world—lacquer, which has certainly revolutionized finishing in many ways. All of these new additions in the industrial finishing field have made the modern finisher considerably different from the old-time finisher. —Joseph Cowan.

Shellac Booklets

This office has just received from William Zinsser & Co., Inc., of New York City, two attractive and interesting booklets on shellac. Both booklets, "The Story of Shellac" and "Shellac and Its Uses", disclose valuable information in a way that holds one's interest. The booklets are easy to read and they are free.

Biax F. S. Co. Moves

Biax Flexible Shaft Co., of New York City, have moved from 136 Liberty St. to 20 East 17th St., where they will have an entire floor occupied by the service department and main office. This company supplies various tools for grinding, sanding, rubbing, buffing and polishing, all of which are driven from individual motors through flexible shaft transmission.

Invite us to show you

Sun Flat Lacquer

We will display our goods at our expense, and give you practical advice. How best to use.

White No. 1 Lacquer

COLORLESS

Clear and transparent, looks like a coat of celluloid on work. Can be polished.

FINISHING ROOM FAVORITES

No. 115 Pale Rubbing

The reliable quality varnish that held its own so many years in the face of keen competition.

SUN VARNISH CO.

Louisville, Ky.

Revealing characteristics in the design and finish of radio cabinets exhibited at the 75th Annual State Fair of Indiana

Latest Radio Cabinet Finishes

By F. W. Worthington

AT INDIANA'S 75th annual state fair, held in Indianapolis during the first week in September, a special radio exposition was included where a score of exhibitors presented the latest radio outfits. It was a good place to see wood finishes and to note the trend in the designs and finishes of cabinets for this greatest of all home entertainers.

Furniture of Refinement

Of outstanding importance is the fact that radio cabinets are taking on the appearance of high class furniture, with nearly all evidence of electrical and mechanical devices hidden from view. The console models in various designs are decidedly in favor. Table sets and those made up in the form of writing desks or spinet desks are in the minority.

A deluxe console model that presents a particularly well balanced appearance, and which carries the designer's name, is 42 ins. high, 45 ins. wide and 18 ins. deep. At each of its four corners, this cabinet has turned legs which support the base 9 or 10 ins. above the floor.

The Prize Finishes

The favored wood continues to be walnut—or other woods in walnut color—although several mahogany cabinets were also on exhibition. Those cabinets which proved to be particularly attractive were in beautifully figured and mildly high-lighted walnut, finished natural or only slightly dark in color. The prize finishes are clear enough to reveal the natural beauty of wood figure and grain, and their surfaces are rubbed to make them pleasingly smooth to the touch. A moderate luster completes the sales appeal.

In contrast to the cabinets characterized by beauty of wood figure, mild highlighting, transparent finishes, moderate luster and smooth surfaces in both wal-

"Wears like Flint"

Quality +

In none of the lines we specialize in are we content to be only "just as good" as our competition.

On the contrary our whole business policy is one of "giving more for the other man's dollar" than simply an equal quality would require.

Along with "more for your money" value in the goods themselves, we also render high class, intelligent service.

We specialize most in lacquers, clear, colored, rubbed effect, and in rubbed effect varnishes, flat, velvet and semi-bright.

THE CLEVELAND VARNISH COMPANY

Established 1881

3111 EAST 87th STREET CLEVELAND, OHIO, U. S. A.

Kindly mention INDUSTRIAL FINISHING when writing advertisers

nut and mahogany, there appeared some on which the finish was practically devoid of character or decorative merit—finishes so dark or muddy in appearance that they effectively hid the cheap cabinet woods used; others in which the high-lighting had been grossly overdone; also finishes that exhibited traces of white pumice stone in routed lines, in corners and next to moldings.

In a few cabinets the finish could not hide the lack of skill and good judgment in the choice and matching up of structural parts entering into the construction.

Decorative Features

Aside from the decorative effect obtained by the general outlines and proportion of cabinets and the figure of woods used, some added ornamentation on a few of the more elaborate cabinets included an attractive arrangement of figured and striped veneers—for example, diamond matches, four-way matches, mitered borders of cross striped veneer around highly figured panels, checker board areas, overlays, etc.

Cabinets in brilliant colors or with much colorful decorations were not on exhibition. In the few cabinets where any color appeared it was as jewelry on a well dressed man—not particularly prominent or lavish. The colors used so sparingly consisted chiefly of red, gold and green. Routed lines generally appeared in black, although in one cabinet the routed lines were oversize in width and done in red and gold.

Metal Grilles

In one line of radios the grilles are made of slender strips of bronze-colored metal, crossing one another diagonally to form a sort of coarse diamond-shaped mesh. The darkened or antique bronze harmonizes with the lighter colored gold gauge which stretches over the mouth of the horn. The metal grille is attractive and probably costs less than a plywood grille large enough to cover the same area.

What Heavy-Coated Shellac Did to Lacquer

Recently one of my customers complained that the lacquer he was using, dried too slowly. He had recently changed finishers; the new man was accustomed to using heavy shellac and was not acquainted with present - day lacquers.

Solvents in the lacquer attacked the heavy-coated shellac surface which softened, thereby retarding the drying of the lacquer. The same lacquer was sprayed over a lighter coat of shellac, with the result that the drying was perfect.—Joseph.

Spray Painting Folder

The W. N. Matthews Corp., of St. Louis, Mo., is mailing out an attractive folder which illustrates some of its spray-painting equipment, at rest for inspection, and in active service on maintenance jobs.

A Du Pont Sales Manager

John H. Stutt has been appointed District Sales Manager for the Philadelphia-Parlin District of the Chemical Products Division of E. I. du Pont de Nemours & Co. His offices are located at 3500 Grays Ferry Road, Philadelphia, Pa.

Zinsser Announces New Product

By letter and an attractive circular with color-card chart, William Zinsser & Co., Inc., New York City, is announcing a newly developed, quick-drying, high-gloss finish—a shellac product—which has been named "Bulls-I-Namel", and which is available in 12 popular colors and in black and white.

MEETING

A Long-felt Want

SPRACO'S

Pressure Cup Gun

Having the Advantages of the

Pressure Tank Equipment

This new Gun puts into the hands of the finisher a gun which, though of the cup type, will handle heavy gravity liquids not possible for the ordinary Cup Gun and thus avoiding the mixture of a quantity of lacquer such as is necessary where pressure tanks are used. The only difference from the pressure equipment is in the size of the material container.

This means that in every case where the pressure tank equipment is not required for volume production a saving of material and time per job is made possible. Why? The ordinary cup gun requires a lacquer mixture of about 50-50 with thinner. This new gun will handle a much heavier mixture and thus save thinner; since it applies a heavier coat fewer applications are necessary and thus it saves time.

It will pay you to investigate through asking for Bulletin No. 103

Spraco Painting Equipment Co.

Makers of the dependable 14-A Gun

60 High St., Boston, Mass.

SALES AND SERVICE STATIONS New York Detroit Chicago

How a resourceful superintendent handled an emergency

Finishing Schedule Shortened in Emergency

When it became necessary to shorten the finishing schedule on a lacquered walnut job, a quick-drying lacquer coat was substituted for the customary wood filler

By E. F. Werner

AFTER many years of experience in industrial establishments I find that the average workman and foreman (and the finisher is no exception) are too often ruled by precedent; any attempt to change the customary routine is met with antagonism. The way "we have been doing for years is the only way and so naturally it must be the correct way." If, by chance, some emergency arises which compels certain manipulation to get an order out on time, trouble is encountered at the very beginning, by the attitude of the men.

The Promised Date

In the particular establishment I have in mind, our salesmen take orders in direct competition with other houses, and often the ability to deliver manufactured goods on a scheduled date is the deciding factor in obtaining the order. Naturally, if the competition has been keen, several samples must be submitted and some changes in design are often required. During this period no production is under way but the delivery date continues to approach.

Finally, when the factory order is released, stock must be glued up, certain parts must be turned, others carved, and then comes the final assembly. All of this takes considerable time and as a result the job arrives in the finishing room a day or so behind the time scheduled.

The nature of the wood—gum, oak, or walnut—and the various finishes, such as natural, antique, filled, etc., are factors in the discussion as to what manipulating may be done in order to hold to the promised delivery date. Sometimes, an extension is obtained, but in the following incident no extension was possible. The goods had to go out on schedule time!

The order was solid walnut—filled. The same order for one of the other stores of the company had been filled, matched and given two coats of lacquer with sanding between coats. The same specifications were required on goods for a store that was opening up on a scheduled date; the goods had to be there for the window display.

One Day Late

The job arrived in the finishing room one day behind schedule; if the regular routine were followed, it would be impossible to ship on time. The previous

LACQUER
GLOSSY—FLAT

Our glossy body lacquer can be polished to produce a very high lustre. It will not chip or check—sprays freely.

For a dull-rubbed effect our flat lacquer produces an excellent finish at low cost . . . where competition is keen this particular material will be found extremely advantageous.

These lacquers are not an experiment—they have been tried and tested and are being used very successfully by hundreds of furniture manufacturers. We spent years developing them, and were firmly convinced that they would accomplish all that would be expected of them before we offered them to the trade. Liberal samples on request.

Indianapolis Varnish Co.

131-147 NORTH PINE ST.

Indianapolis, Indiana.

Operation	Time	Rate	Labor	Material
Stain and fill (one operation)	4 hrs.	$ .33	$1.40	$ .80
Allowed to dry over night				
First coat lacquer	1¼ hrs.	.60	.75	1.80
Matching	1 hr.	.75	.75	
Allowed to set 4 to 6 hours (usually over night)				
Sanding	1½ hrs.	.35	.52	
Second coat lacquer	1½ hrs.	.60	.90	1.60
(Total direct costs)			$4.32	$4.20

Table I—This schedule required three days, and involved a total cost of $8.52, not including overhead.

job had been finished according to the schedule shown in Table I.

One day had to be made up and still turn out a presentable job. We had, on previous occasions, attempted to apply the first coat of lacquer without letting the filler dry overnight, but the filler pulled out and made the surface look as if it had not been filled properly. We also had applied the two coats of lacquer, sanded and matched in one day, but the chances taken did not justify the result, because in several instances we had pulled the previous coat by sanding too green.

The Superintendent's Suggestion

The writer, not being an old-time finisher, asked this question: "Why can't we dispense with the coat of filler and apply an extra coat of lacquer?" Every imaginable objection was raised; one would have thought I had suggested that some one be murdered, judging from the expressions of the finisher foreman.

Fortunately, the man who made the suggestion had the authority to order the work to be handled in whatever way he desired. Fearing possible trickery on the part of some one, no work was allowed to proceed except in the presence of the writer. The work proceeded according to the schedule shown in Table II.

The increased cost of this method over the other was $1.14, but the day saved meant delivery on time and a satisfied customer instead of complaints.

On every job that is in any way special we keep a sample of the finish—a small strip of wood finished similar to that sent out.

Operation	Time	Rate	Labor	Material
Stain	1½ hrs.	$ .35	$ .52	$ .70
Dry two hours				
First coat lacquer	1½ hrs.	.60	.75	1.80
Dry over night				
Sanding	1½ hrs.	.35	.52	
Matching	1 hr.	.75	.75	
Dry one hour				
Second coat lacquer	1 hr.	.60	.60	1.45
Dry one hour				
Third coat lacquer	1¼ hrs.	.60	.75	1.80
(Total direct costs)			$3.89	$5.75

Table II—The new schedule, to meet an emergency, required only two days, and involved a total direct cost of $9.64. Compare this with Table I.

WHY big manufacturers choose Paasche equipment

LARGE furniture manufacturers whose finishing costs are figured to the last cent choose Paasche Airbrushing Equipment because finishing costs and equipment upkeep are cut to the minimum.

The famous Karpen line is finished completely with Paasche equipment at a saving of many thousands of dollars yearly in labor costs alone. Hundreds of leading manufacturers have standardized on Paasche finishing equipment. You will eventually.

Paasche is the logical choice because:

The renewable head of the Multiplehead Airbrush allows easy cleaning. The Airbrush shoots an even spray, fan or round shape, at high speed. It is light and well-balanced, making operation easy and reducing fatigue.

Each unit is an integral part of an experience-developed system.

The airbrush, for example, adjusts quickly to the finest line or wide spray, conical or flat fan. The two-finger trigger lessens fatigue, and the fully enclosed construction stops clogging and minimizes wear and breakage.

Write for full information on this cost-cutting finishing equipment

Paasche Airbrush Co.

1921 Diversey Parkway, Chicago, Ill.

Leading designers of finishing room equipment

New York, N. Y.	Cleveland, Ohio	Seattle, Wash.	Toronto, Canada
Los Angeles, Cal.	Denver, Colo.	Detroit, Mich.	A. R. Williams
San Francisco, Cal.	Pittsburgh, Pa.	Davenport, Iowa	Machinery Co.

IF 10 - Gray

Usually these samples are in strips about 2 ins. wide, 6 ins. long and ¼ in. thick. I took the sample from this last job and the one from the previous job, and allowed them to lie in the open until they both showed the same dusty appearance; then I wiped off the dust. After special distinguishing marks had been placed on the samples, the men were asked to select the piece that had been filled and the piece that had not been filled. Naturally some guessed one way and some another.

A Guessing Contest

Those, who had, by chance, guessed correctly the piece that had been filled, were so positive they could always identify an unfilled piece of wood, that I decided to prove them "just a bag of wind." Two pieces were stained properly and the same number of coats of lacquer applied to each one. The pieces were shown to the men and their opinions asked. It was amusing to hear them "hem and haw" about the samples. Some declared that both were filled; some believed that one was filled; and some were honest.

The additional cost does not, as a rule, justify the saving in the filling, because it ties up a spray hand who is always needed more in our plant than a girl on filling, but the particular occasion cited, demanded immediate action; there was no other way out of it.

Too often the fullest co-operation is not received from the finishing room, nor in fact, various other divisions of the plant. It is practically impossible for a superintendent to be a master of all trades; usually he shows a weakness in one or more departments. Of course, the general knowledge and information are there, but the skilled application is missing, and some men will always try to take advantage of such a situation. It is the general training and the ability to stand back from the job and to analyze the entire procedure, that enables the trained mind to grasp the general ideas and pull out of embarrassing situations.

"It's Good Enough"

The expression, "It's Good Enough", is an old one and, as we all know, much abused.

Colloquially analyzing the man who says, "It's good enough:"

I ? . . . . . .
T Is what he doesn't drink.
S (Yes) It will just pass—let it go.

G Why so fussy—no one will see it.
O I don't care.
O That's all right.
D Customer be damned.

E Uses lines of least resistance.
N Won't see it (Hen the boss).
O Pass it—it'll go.
U Should worry—let it go.
G For crying out loud—"It's good enough."
H Ell is good enough for him—let it go.

—C. W. Hardy, Industrial Engineer of Frank J. Quigan, Inc.

Veteran Advertising Manager Dies

Charles H. Smith, widely known and beloved advertising executive, associated with Berry Brothers for the past 50 years, died at his Calvert Ave. home in Detroit Friday, August 26.

Mr. Smith is survived by his son Craig, a young advertising man connected with Printers' Incorporated.

The death of Mr. Smith marks the passing of the oldest and one of the most respected of Berry Brothers employees.

As the first advertising manager for Berry Brothers, Mr. Smith coined such descriptive and now well-known trade names as "Liquid Granite," "Luxeberry Wood Finish," "Berrycraft," etc.

"If you could ask manufacturers who use Murphy varnishes and finishes on furniture, pianos, automobiles and other things, if you could talk to architects who specify Murphy finishes, and master painters who use them, you would find that all have a certain confidence in the name Murphy. This confidence is what constitutes the Murphy reputation. Murphy Varnish people are determined, come what will, they will never put out a product that lessens their claim to that reputation."

A New Murphy Product

Murphy's Clear Tone Velvet Lacquer

Every product that Murphy brings out is designed to do a job which will add to their reputation. Furniture manufacturers will be more than interested in what Murphy Clear Tone Velvet Lacquer has to offer.

1. Dries naturally to a *rubbed effect*—beautiful soft glow.
2. Positively *does not cloud the work.* Absolutely transparent. (Clear-tone Velvet Finish).
3. Does *not* settle in the can.
4. Easiest Sanding Lacquer (here's where you save without the sacrifice of refinement or durability). Does not clog the sandpaper.
5. Has excellent *building* quality; can be used as a first coat, intermediate coat or finishing coat in connection with regular lacquers.
6. Saves *one-half* present rubbing cost.
7. No *pin-holing* on largest surfaces like grand piano tops.
8. Will intermix with any Murphy Clear Lacquer if additional lustre is desired.

A postal card will bring a representative to call and demonstrate this new Murphy product.

MURPHY VARNISH COMPANY

NEWARK · CHICAGO · SAN FRANCISCO · MONTREAL

Describing low-cost production methods employed in finishing wood stocks for air rifles.

Finishing Air-Rifle Stocks

By Donald A. Hampson

LIKE PIANOS, the demand for air rifles keeps up year after year, in spite of new toys and marvelous inventions. It is not even a season business.

Practically all the air rifles are made in two factories in one midwestern town. Brought blindfolded to the town, a visitor would suddenly find himself in what his uncovered eyes might take for a thriving New England village, with its green and the well-painted houses and an air of being all-American and prosperous. For Plymouth, Mich., is just that way and the air rifle business is largely responsible.

Considerably more than 1,000,000 air rifles are made here annually. The King factory is the oldest, the Daisy factory is the largest and employs about 140 hands.

Wood is used exclusively for stocks. The shaping and finishing of these stocks has to be done very quickly, for the entire rifle may sell at the factory for, say, only 50 cents, including the intricate mechanical parts which are joined to the stock.

Various woods are used for stocks, according to the supplies available and the selling price of the gun. Maple and walnut were formerly used but they have become too scarce and too high. Gum is now used extensively for pop-gun stocks and also for some of the better rifles. Beech and poplar also find their way into stocks.

After the stocks are shaped, they are finished by tumbling or dipping. These processes have been worked out so that they are inexpensive. The labor cost on the better stocks does not run over half a cent a piece, which may cover two coats and a sanding operation between. The equipment is of the most foolproof kind and it represents a comparatively low cost investment. Taken in connection with the low upkeep and the fact that the finishes have stood the test of many decades in all climates, the methods employed are worthy of study.

The Tumbled Finish

Cheap pop-gun stocks are tumbled. The length of time for tumbling depends upon the size of barrel and the charge; the speed is also a matter of local determination. Tumbling is usually something that has to be settled according to the details of each particular plant's work and equipment.

Stocks are put in the tumbling

Officially Adopted

THIS is the Color Age, and the vogue demands gorgeously hued effects in wood finishing that accentuate and enhance the natural beauty of wood.

Marietta wood finish specialists, pioneers in seven epoch marking developments in the wood finishing world, have developed a new group of finishes to meet this demand. This group completes the nationally known line of Marietta Stains for all woods.

Cooperating with one of the world's largest producers of Northern Hardwoods, we are publishing new finishing specifications embodying a recently developed series of Marietta Stains, finished with the well known American Lacquer and Varnitro.

These specifications have been adopted as official by the Maple Flooring Manufacturers Association, 332 South Michigan Ave., Chicago, Ill.

Panels showing the unusual effects obtained with these new stains may be secured from the above Association or direct from—

MARIETTA WOOD AND METAL FINISH SPECIALISTS

MARIETTA PAINT & COLOR COMPANY

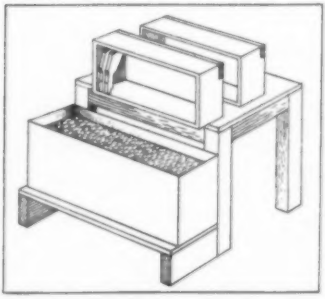
MARIETTA, OHIO **HIGH POINT, N. C.**

barrels along with a charge of sawdust. A stain is used for coloring. Thus the imitation walnut, for instance, is pressed into the stocks as they revolve, and the desired color is imparted to the wood, ready for the counter. A dryer is mixed with the stain; this serves the double purpose of hastening the set, and of varying the color—more dryer gives a lighter color, up to that of a "natural wood" finish. An advantage of tumbling is its smoothing effect, laying down the grain of the wood so that sanding is unnecessary.

Dipped Shellac Finish

An entirely different process is used for the best class of stocks. Two coats of shellac are applied to these, with a sanding operation between that takes off what little grain has been raised by the first coat. It is quite evident from the finish obtained that the method is a good one, and well adapted to the product.

The drawing shows the dipping equipment as used at the Daisy factory. A metal tank containing the shellac is placed in front of a work table. Wood racks to hold 50 stocks are used throughout the finishing process and empty racks are put upon the table directly back of the tank. Blank stocks are brought up to the left on trucks. Workmen dip the stocks vertically in the shellac and place them in the racks. There is very little excess shellac adhering to the wood as it is withdrawn from the tank, but what there is runs to the forward end; any drops that form are later covered by the metal barrel.



Dipping unit for air-rifle stocks.

When one rack is full, it is pushed back on the table and another one is put in its place. When the table is full, the workman puts the load inside a clean warm drying room close by. The stocks are dipped and racked just as fast as a man can handle the pieces, which is a most satisfactory rate of production. A pail of alcohol kept nearby is used for rinsing off the hands whenever this becomes necessary.

The shellac finish is hard and of the dull gloss that is so popular today. The method of dipping and racking is such that the "shoulder end" of the stock is free from any excess material, and the entire surface is as satisfactory to the retailer as it is proof against the hard knocks which it receives at the hands of young America. Moreover, it is a coating that may be applied economically in a trade that sells through mail-order houses and jobbers.

In the finishing department of automobile plants there is a marked tendency to increase the amount of air handled by the exhaust system and to insure a separate supply system for the building to replace the air removed and with heating capacity for winter.

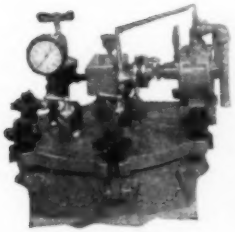
The Binks
No. 105
Type "A" Gun

for Varnishes

With the extremely low operating pressure of approximately 35 pounds you can secure a varnish coating of super quality!

Try it—but only with the Binks No. 105 Type "A" Gun. The results will surprise you. At this low pressure and working as close to the surface as only this gun can, you eliminate excessive spray mist. You save material, safeguard the health of the operator, speed up finishing schedules and cut your power bill 50%. And your finish is the finest any method can produce.

Try it—you will be glad you've taken us at our word.



Binks Pressure-Head with Air-Motor Agitator

Now you can have a really dependable agitator on your pressure tanks for Wood Lacquers, Wood Fillers, Enamels, etc. The Binks Air-Motor supplies a new element of safety and efficiency. Finishing materials are constantly kept in a uniform consistency and the mixture of all ingredients reaches the spray gun in even, perfect flow. Write for details.

BINKS SPRAY EQUIPMENT CO.
Dept. K, 3114 Carroll Ave., Chicago, Ill.
Offices in Principal Cities

The attached article was inspired by some recent conversations with finishers and my own experience. The article, I think, speaks for itself as to its purpose.—THE AUTHOR.

What I Learned from I. F. Ads

Foreman finisher calls attention to some of the valuable information he obtained through careful reading of advertising pages in Industrial Finishing

By Wm. J. Wilcox

HOW READEST thou? Understandest what thou readest?" These questions are as pertinent today as when they were first asked nearly 2,000 years ago. In this age of daily newspapers and the rapid production of books, the average man finds it difficult to choose what to read and how to read after he has made a selection, in order to get the information which will be of most value to him.

I am not going to ask, "What do you read?" because I am interested now only in readers of this journal, and as such you are interested in one or more of the many branches of finishing. The first important question is, How do you read? What do you hope to get out of what you read?

Reading, like eating, should be done in moderation. One should not read too fast, nor read more than he can mentally digest. Some fiction readers skip all historical and descriptive matter; and read just enough to get the story. Having read the story, they lay the book aside and plunge into another, without taking time to do any thinking about the moral the story contains. Such people benefit very little, if any, from their reading. There is always more in a story or an article than appears on the surface.

Read Thoroughly

Readers of a journal such as this hope to get information that will help in solving some of the problems which daily confront them. As stated before, there is more in these articles than appears on the surface. No writer knows it all, nor does he pretend to. Some things cannot well be put into words; they must be learned by meditation and experience. To get all there is in a technical journal one must therefore, think as well as read, and then put his thinking to a practical test. Only in this way can one thoroughly understand what he has read.

Recently I met a finisher who said: "I do not know how I could manage now without INDUSTRIAL FINISHING. Not only is the reading matter interesting, but the advertisements are particularly valuable, for they tell me what materials and equipment are available for making the various finishes. The advertisements do more to help me keep up to date than any other matter in the journal."

What this finisher said is silently recognized by hundreds of

TECHNICAL RESEARCH DATA

at Your Call

PERHAPS we are mistaken, but we in the Valentine Organization believe that nine times out of ten we can devise better and more economical finishing methods than those now in use in most shops.

That is our job. And the experience of a century in research, development, manufacture of fine finishes, and in contact with industrial concerns interested in finishing of every conceivable nature, leads us to believe we *usually* can be of service to those who call us in.

We say "usually" because there are times when no change is advisable. And when such is the case we are frank to say so. If you are interested in a technical consulting service of this nature, backed by the widespread experience of a world-known organization, address:—

VALENTINE & COMPANY, 456 Fourth Avenue, New York

NITRO-VALSPAR

The *Valentine* Lacquer Finish

others throughout the U. S. and Canada. Perhaps there are some finishers and factory executives who do not read the advertisements closely, consequently they do not know what valuable information is contained therein. Let us examine a few of the ads in a recent issue.

Finish Designing

How many furniture factory executives and finishers know exactly the kind of finish best suited to a certain design? Today, the finish is a big factor in selling the goods, but the finish must be in harmony with the design, therefore the problem, how to design a finish to suit the design of the furniture.

This is a serious problem in many factories, and it is no reflection on the foreman finisher as such. He may be able to reproduce any finish to perfection, when given the materials with which to do it. He may even be able to readily detect any discord between the finish and the design of furniture, but he is not a designer of finishes. He is like the executive that delights in reading beautifully worded letters, or essays, though he can neither dictate nor write one himself.

The designer of finishes, to harmonize with the design of furniture, is like the writer of beautiful literature—a man apart. He knows how to create harmony in finish and furniture, though he may not be able to succeed as a finisher foreman.

The problem of how to obtain the correct finish for any design in furniture is solved by certain advertising pages of this journal. These designers of wood finishes have a natural adaptability for their work, and to this is added many years of careful study of the problems incidental to obtaining correct finishes. So long as a correct finish is one of the most powerful factors in selling furniture, no furniture manufacturer can afford to run the risk of having his furniture finished in a way which does not harmonize with the design of the goods.

Interior Finishes

Do you know that next in importance to having the exterior of your furniture correctly finished there is the matter of interior finish. Many finishers recognize this fact, but they lack information about what to use that will not be too expensive. For years I was in that position and I did a great deal of experimenting with a view to obtaining a material which would be moderate in cost, dry rapidly without gloss, and present a clean surface that is soft and smooth to the touch.

But manufacturers of lacquers and enamels have far surpassed any efforts of mine in producing the material desired in shades to harmonize with any exterior finish; and advertising pages tell where this material can be obtained.

Shading Stains

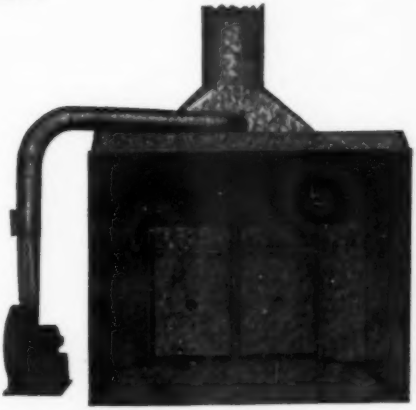
Notwithstanding the progress that has been made in shading stains, and stains for straight-line two-tone work, some finishers are trying to get along with ordinary stains for this work, and are doing their straight-line work with a brush. Reference to the advertising pages of this journal will convince the thoughtful and would-be-progressive finisher that there is nothing quite so good for the purpose as a special shading stain; that the best and most delicate shading, as well as straight-line two-tone work can

"Eliminate a Fire Risk"

NEWCOMB

SYPHON VENTILATED CABINET

THE "NEWCOMB" GIVES YOU everything you could want in a spraying cabinet and much more than you had thought possible.



Let us tell you about our latest and best development; the fan with direct connected motor, independent of booth, with rear of booth fitted with reclaiming chamber and baffle-doors.

Grand Rapids Blow Pipe and Dust Arrester Company

Dust Collecting Systems 527 Monroe Ave. Grand Rapids, Michigan

Kindly mention INDUSTRIAL FINISHING when writing advertisers

What is your fi

Egyptian Lacquer will solve it— Saving time and money

LET us quote J. R. Palmenberg's Sons, Inc., manufacturers of display fixtures, papier mache forms, wax figures, etc., New York, Boston, Chicago, San Francisco:

The photograph of the forms shows our flesh enamel form which is finished with the lacquer. Also, a simple round metal base finished in a dark bronze treated with your lacquer. The various other fixtures are a part of our new Gregorian line of solid bronze fixtures. These fixtures are finished in a natural bronze or bronze with black relief and treated with your lacquer.

Today's *nationally advertised* Egyptian Lacquer marks the highest point in nearly half a century of experience with lacquer and lacquer exclusively. It now regularly comes clear, transparent colored, in 140 shades of pigmented lacquer enamel—or to fill any special "prescription," call on our Service Department without obligation.

EG

THE EGYPTIAN LAC
Complete

ATLANTA, BOSTON, CHI
PORTLAND, OR

r finish problem?

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Sons, Inc.,
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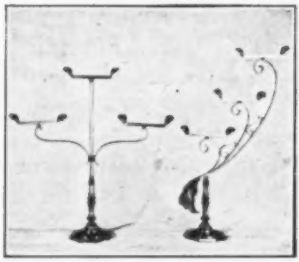

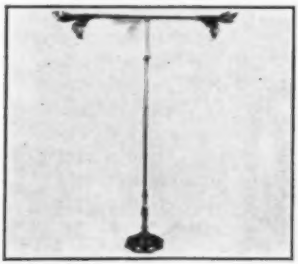

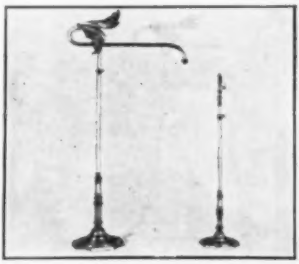

EGYPTIAN Lacquers

EGYPTIAN LACQUER MFG. CO., INC., 90 West Street, New York

Completely equipped branches in charge of practical men *are maintained in the following cities:*

NTA, BOSTON, CHICAGO, CLEVELAND, DALLAS, DETROIT, LOS ANGELES, PHILADELPHIA, PORTLAND, ORE., SALT LAKE CITY, SAN FRANCISCO, SEATTLE, ST. LOUIS

EGYPTIAN SUPERIOR LACQUERS

The maker who is proud of what he makes, uses Egyptian Lacquer

The Compressor for perfect spray painting

THERE'S one point you've decided on—that is to get the best spray gun manufactured. You want your paint jobs to build up your reputation.

But don't overlook this fact. No spray gun is better than the Compressor that runs it. That's why you should insist on a Model "P" Quincy. You'll get steady pressure, clean, dry air free from oil, and quiet, vibrationless service for a life-time. Quincy Compressors are built to make any kind of spray gun 100% efficient.

Many manufacturers of spray guns sell Quincys as original equipment.

See that a Quincy runs your paint spray outfit.

Quincy P
In five sizes. Can be furnished either with gas engine or motor drive. In portable or stationary style.

QUINCY COMPRESSOR CO., Quincy, Ill.

Write today for complete information

QUINCY COMPRESSOR CO.

305 Maine St. **Quincy, Ill.**

K306

be done in much less time with a spray-gun especially designed for this work.

Air Filters

A great many finishers have trouble with dirt in the air passing through the air-line, and adhering to the finished surface. For many years manufacturers of heating equipment have given serious study to purification of air in the factory, and they have made great progress in that direction. But modern methods of applying finishing materials demand that this purified air be made still cleaner, before it is permitted to pass through the spray air-line and carry the material to the surface being coated.

Those who are using flat lacquers and varnishes know, or should know, how important it is that the coated surface be absolutely free from dirt, in order to present the appearance of having been rubbed. In addition to having clean air it is necessary that the air be as free as possible from moisture. White spots and pitting of the coated surface are frequently caused by an inadequate appliance for removing moisture from the air before it passes through the air-line.

Finishers who have reason to believe that their present equipment is not sufficient to remove all foreign matter from the air would do well to consult the advertising pages of this journal, and learn how to overcome this trouble at small cost.

Developing Improvements

Many finishers know there is something wrong in their respective departments, and some of these finishers are trying to correct the defects. Sometimes a man is able to carry his experiments to a certain point and then is forced to stop, because he hasn't the means to carry them farther. Perhaps his department is in good shape, but he wants to make it better. To that end he devotes a great deal of thought and time.

I believe that advertisers in this journal would be glad to co-operate with progressive finishers in the development of new ideas along their respective lines. Manufacturers of finishing material and equipment have service departments manned by specialists in their respective lines, and are glad to render every possible assistance in the development of new ideas, and in solving various problems of the finishing room.

The finisher who does not avail himself of the information contained in the advertising pages of this journal, does not get out of the journal all there is in it for him.

By using stamped steel parts, as opposed to iron and aluminum castings, it is claimed that large savings are possible in production and distribution.

Spraco Moves

The Sprayco Painting Equipment Co. announces removal of its New York office to new quarters—Room 672 Bryant Park Bldg., at 55 W. 42nd St. H. P. R. Hansen is District Manager.

Hilo Introduces Industrial Lacquer

With the introduction of Hilo lacquer, both clear and in colors, Hilo Varnish Corporation of Brooklyn, N. Y., has issued a technical Bulletin, No. 11, which treats of the products it is prepared to furnish, and their various purposes and methods of application.

With its new and up-to-date plant and laboratory, manned by a staff of lacquer experts, Hilo is prepared to handle and competently service quantity requirements.

Industrial Finishing

PRACTICAL PUBLICATIONS, Inc.
Publishers
Room 802, 222 E. Ohio St.
Indianapolis, Ind.

Issued monthly. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.

EDITORIAL

Quality, Economy, Service

With fall activities now under way, plans for the immediate future are receiving consideration by executives in industry. Manufacturers are keenly aware of sharp competition, conservative buying and narrowing margins of profit. To meet these conditions progressive individuals and concerns are devoting special attention to three outstanding factors —quality, economy and service.

Quality of product comes first, since buyers in every price class, now, are inspecting more carefully and more critically whatever they buy. Included in quality are such elements as appearance, utility and probable lasting qualities. To make satisfactory sales, it is important for the manufacturer to put as much value as he can into his product—considering the price class.

Economy in the organization comes next, since without economical operation it will be impossible to furnish the quality of goods at prices which will assure good business. Economy, however, doesn't mean cheapness, as for example, witness the automobile factories.

Service goes hand in hand with the other factors, since present and future sales certainly depend upon the firm's ability and willingness to furnish what is wanted, when it is wanted—and further, to give complete cooperation on any complaints or dissatisfaction that may arise.

Regulating Use of Spray Equipment

The Department of Safety of the Industrial Accident Committee of the State of California is attempting the formulation of orders to regulate and control the application of paints, lacquers, etc., by spraying equipment in the State of California.

Under the Workmen's Compensation, Insurance and Safety Act of the laws of 1917, this commission has power to make and enforce rules and regulations, prescribe safety devices and fix safety standards. It is also empowered to appoint advisors, without compensation, who can assist in the formulation of standards of safety. Various interests which will be affected by the proposed legislation have been asked to appoint representatives to draft Spray Coating Safety orders. At committee meetings held in Los Angeles and San Francisco, a tentative draft was drawn up and will be considered at public hearings, at which time anyone interested may file objections.

These tentative orders have not yet been released for publication in their entirety but are apparently patterned after the regulations now in effect, or under consideration in the State of Pennsylvania. They are not nearly as drastic as the bill submitted to the New York State Legislature for three years, which prohibited the use of

SINCE 1846 TRADE M&L MARK

Industrial Finishes

A Lacquer foundation for a Lacquer finish

FLINT LACQUER PRIMER

made in clear and in all colors

Flint Lacquer Enamels
in all colors

No. 15 Clear Lacquer

No. 20 Flat Lacquer

Walnut Shading Lacquer

Place a trial order and convince yourself of the merit of these products

MAYER & LOEWENSTEIN
LONG ISLAND CITY, NEW YORK

spray equipment and which was overwhelmingly defeated at its last hearing. The tentative draft will be thought both beneficial and detrimental in certain parts, and will undoubtedly meet with lively objections at the public hearings.

Insofar as they are designed to effect a safeguard for the lives and health of workmen, they are beneficial, but some of these safeguards are undoubtedly carried to extremes from the viewpoint of the employer. A few instances:

The use of benzole is prohibited as a lacquer thinner. It is not probable that a commission of this kind is as well equipped to specify what shall be used as a lacquer thinner, as is the manufacturer.

All cabinet booths used for spraying shall be cleaned daily. Implements of wood, fiber, rawhide, soft metal, or other non-sparking material, must be used for cleaning. This would prohibit the use of putty knives or scrapers made of steel.

All spray operators inside of room booths, where cabinet booths are not provided, or in the open air, must wear an approved hood, jacket and gauntlets. Respirators or other similar devices of the filter type must be cleaned or the filtering material replaced twice daily. All protective clothing shall be furnished and maintained in a sanitary condition by the employer. A complete change of clothing shall be furnished once a week or oftener if necessary.

It is probable that considerable discussion and argument will take place before these tentative orders are promulgated.

In large plants where there are a number of spray booths in continuous use, mechanical ventilation is always used, usually in the form of a centrifugal exhaust fan or a blower fan and a special air nozzle, arranged to create suction in a syphon stack. The advantage of the latter lies in the fact that the vapors do not pass through the fan and the possibility of ignition as the result of spark is thus eliminated.

Aircraft Finishing Specifications

The Marine and Aviation Department of Berry Bros., Inc., at Detroit, has compiled and is sending out to those interested, a set of specifications which include recommended materials and methods for finishing every portion of modern aircraft. These specifications, and later appendixes to them, are in double-spaced typing on punched loose leaves of ordinary business letter size.

Du Pont Man Transferred

The Paint, Lacquer and Chemicals Department of the du Pont Co. announces that effective Sept. 1, G. K. Stout, who was formerly salesman in the Chicago District, has been transferred to the New England Territory to serve as Assistant Manager. Besides acting as Assistant to Mr. Chandler on Industrial Sales generally, Mr. Stout will give special attention to the supervision of pyroxylin sales. His experience with pyroxylin materials especially adapts him for this work.

Water White Lacquers No. 82

For Gold
For Silver
For Brass
Always Dependable

Established 1857

CHAS. COOPER & CO.
90 Worth St., New York---Works Newark, N. J.

SUPERIOR WOOD STAIN POWDERS

For Lacquer and all finishes.

Complete variety of shades. Samples and information on request.

W. D. LOCKWOOD & CO.
314 W. 14th St., New York

Ed Smith's Page

HOW TO USE LESS LACQUER --SAVE MONEY AND GET A FINER FINISH!

We are showing finishing foremen how to do this right along through the use of Edward Smith Lacquer Enamel.

The remarkable success of this lacquer enamel is due largely to the perfect Balance of its high-boiling solvents and nitro-cellulose base.

The combination effects three things:

FIRST, we carry a larger-than-usual percentage of lacquer to the surface where it belongs. *This means a minimum of waste through evaporation.*

SECOND, because more of the lacquer reaches the surface instead of evaporating, we get greater coverage per gallon. *This means that less lacquer is required to cover a given area.*

THIRD, because of both the above features, Smith Lacquer Enamel assures the finest looking finish.

These features are worthy of your serious investigation. They save time, save money and assure an increased sales of your finished product.

I shall be glad to send you a typical panel finished with this new-idea enamel. Simply write your name and address on the margin of this page and mail to me. When you get the panel compare it with the finish you are now getting. Wherever this comparision has been made, the verdict is always in favor of Edward Smith "Balanced" Lacquer.

Ed Smith

EDWARD SMITH & COMPANY

Makers of Paints and Varnishes for 100 Years

127 West Avenue

Long Island City, N. Y.

Custom Motor Car Finishing

Consultant on finishing problems reveals specific and detailed information on the operations involved in finishing new automobiles in large, well-equipped factories

By K. N. Kathju, M. S.

THE 1928 automobile season is in full swing. Every manufacturer of fine automobiles is exhibiting new models. Scores of improvements and refinements have been effected, but what particularly strikes the buying public in general is the beauty of design and color in the new automobile bodies.

A greater percentage of the buying public does not concern itself so much with the mechanical features of the improved cars, as it does with the beauty of a pleasing shade of lacquer and the bewitching hue of certain stripes.

Appreciation of new color combinations — their beauty, charm and elegance, as vouched for by humanity in general—is a tribute to the color and lacquer chemist. Nevertheless the finisher who laboriously works on an unsightly steel or aluminum framework and shell, to make it so alluring, is the silent partner of the chemist. He is the silent and uncomplimented salesman, for whose craftsmanship the manufacturer is so highly praised.

To achieve the ultimate and much admired result, the finisher of custom built car body proceeds as follows:

Cleaning Inside and Slushing

Whether or not the frame work is made of wood, the inside of the body is sprayed with a lacquer "slush." In case of metallic framework, the slush helps to prevent any rusting, and, in case of wood, it precludes all chances of moisture absorption and eventually rapid decay, especially in the tropics.

This precaution may be thought of lightly by some, yet the fact remains that a certain automobile manufacturer is now experimenting with a "rot-proof wood slushing," because of repeated complaints of decaying wood in automobile bodies in the tropics. The general practice is to use a good grade of nitro-cellulose slushing because it gives a tougher and more impermeable film than cheap oil-base slushing. After the slushing operation the inside of the car body is allowed to air dry ten minutes at room temperature.

Hammer Out; Sand Clean

An automobile body, whether of steel or aluminum, should be free from dents, holes, waves, file marks, etc., before it is tackled by finishers. All imperfections should be carefully effaced by hammering out, filing, welding, etc., till a perfectly smooth surface is obtained.

Generally, two methods are employed for smoothing and cleaning the surface. Either the entire surface is filed, especially when metal is soft and will permit easy filing, as in the case of aluminum, or, in the case of steel it is sandblasted. When the surface is aluminum, filing and subsequent block sanding are prac-

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FLAT VARNISH

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1315 West Kentucky Street
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Manufacturers of
VARNISHES *and* LACQUERS

tically necessary, since burnished aluminum sheet metal affords a poor surface adhesion. However, whether the surface is sanded or sandblasted, it never should be touched by hand, for obvious reasons. The entire surface is blown with compressed air, especially around mouldings and beadings.

Next the car body is washed with clean cheesecloth dipped in high-test gas or a cleaning solution previously recommended in this magazine. Door hinges, door jambs and mouldings, must be clean. The body is allowed to air dry at room temperature for 2 hours.

Priming

The dry surface must be thoroughly tack-ragged to make doubly sure that it is free of all foreign matter. Depending upon the nature of the material the body is given a coat of nitro-cellulose primer at a gravity of 25 to 30 LL Bé, at 80-deg. F. Every metallic surface should be primed and for this purpose enough pigment is added to the primer, by the manufacturer, so that the operator can watch and guard against skips, etc.

When spraying primer the air pressure in the tank containing same must be maintained at a pressure of 8 to 15 pounds, whereas the pressure at the air brush nozzle should be 80 to 100-lbs. There must not be any deviation from this pressure, since it is a pressure of maximum efficiency. Allow the prime coat to dry 30 minutes at room temperature.

Surfacer and Guide Coats

On aluminum bodies two to four, and on steel bodies as many as eight coats of nitro-cellulose surfacer are piled on with the air brush, used at the air pressure mentioned above. The gravity of the surfacer should be from 30 to 33 LL Bé at 80-deg. F. No drying time between coats is allowed; in fact no drying time is necessary.

Surfacer coats should be uniform and free from runs and sandy appearance. The surfacer coat should be immediately followed by a guide coat, similarly applied. Air dry body two hours at room temperature.

Spot Glaze

About the only place where nitro-cellulose glaze or putty is used is door jambs, which are glazed in solid. However, the putty may be used to fill any surface defects that are noticeable even after surfacing.

Nitro-cellulose glaze should be used at knifing consistency; it is usually reduced by thinner that is rich in "high boilers." Some operators prefer to use it without any reductions. The glaze should be allowed to dry 12 hours at room temperature.

Sanding Surfacer

Starting with No. 280 wetordry sandpaper, workmen must laboriously water sand the entire surface to make it smooth. When an excellent surface has been obtained the water-sanding operation should be repeated, using No. 320 wetordry sandpaper.

Dependable
WOOD LACQUER
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Pioneer Lacquer Manufacturers
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501 A FIFTH AVENUE, NEW YORK

Alongside mouldings and beadings, the surface must be clean and smooth, since the quality of the work is generally determined by the finished appearance around mouldings.

Door jambs are first water-sanded with No. 280 wetordry sandpaper, then dry-sanded with No. 320 wetordry sandpaper. Wash the entire body and allow it to dry three hours. The work thus far is held to a strict accounting by experienced finishers.

"Spotting" and Cleaning

Occasionally, when trying to obtain a smooth clean surface, an operator will rush things through. Such surfaces must be tack-ragged and reprimed by a touch-up air brush, with nitro-cellulose primer such as was used previously. Allow it to dry 30 minutes at room temperature.

Spot spray one or more coats of surfacer, such as was previously used, and allow to dry at room temperature.

If necessary, spot putty as heretofore and air dry same three hours at room temperature.

Using No. 320 wetordry sandpaper, dry-sand the putty, cleaning later with water, especially around mouldings, door jambs, etc. It is necessary to blow off the entire surface with compressed air, making sure that the surface is free from all grease, oil, moisture and other foreign matter. Let the car body dry two hours at room temperature.

Spraying Door Jambs*

Tack rag the door jambs and spray four uniform, sagless coats of lacquer of any specified color, suitably reduced. Allow same to dry one hour at room temperature.

Note:—In open cars, before proceeding to lacquer, the entire surface above the belt moulding is covered with cloth or paper, held by means of special tape. In case of closed cars this practice is unnecessary. Furthermore it is a common practice now to tape off window reveals to be brushed in contrasting lacquer colors last of all.

*If of any color different from that of body.

(To be continued)

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LACQUERS
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One of the large industrial concerns in this country spends about $2,000,000 a year on chemical research work in all of its departments, and employs close to 400 chemists. Among other products, this concern manufactures finishing materials.

An important point emphasized by engineers, which applies to all paint shops, is that as lacquer fumes are heavier than air, the air openings into spray booths should be at the floor line.

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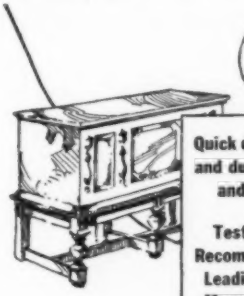

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"A FINISH FOR EVERY PURPOSE"

Questions and Answers

This service department is conducted to meet the readers' need for prompt information on specific problems, and to give others an opportunity to review the questions and to offer comments, suggestions or answers

Withdrawal Speed of Lacquer

With what withdrawal speed should lacquers be applied?—B. N. Co.

What withdrawal speed to be used in applying lacquer depends upon three things: 1—the shape and size of the object being coated; 2—the viscosity or body of the lacquer being applied, and 3—the speed with which the lacquer dries.

The withdrawal speed in general should be about the same rate as the lacquer sets up and quits running. For large objects, of course, the lacquer has to be used thinner and consequently the speed of withdrawal can be faster. The heavier the lacquer in general the slower the article should be withdrawn from the lacquer.—I. F.

Lacquering Tin Plate

We have had more or less difficulty in obtaining pyroxylin lacquers that will *adhere* to tin plate and produce a hard finish even when clear lacquer is applied over the pigmented lacquer. The better the grade of tin plate the more difficulty in obtaining adhesion.

Can you suggest any means of treating the tin plate so the lacquer will take hold more firmly? We want to do this work without any rubbing or polishing.—R. Mfg. Co.

Tin plate produces a very smooth surface and fills up most of the pores of the steel on which it is applied, so finishing materials do not adhere as well to tin plate as to black iron or steel. This trouble is further intensified by the fact that tin plate usually has a film of palm oil which, of course, is detrimental to the adhesion of nitro-cellulose lacquers.

Not all nitro-cellulose lacquers adhere equally well to various types of metal surfaces; in other words, by changing the composition of the lacquer it can be made to adhere to practically any metal surface, provided the metal surface is thoroughly clean.

In other words, a commercial lacquer may be found to adhere very well to black iron or steel but will not adhere well to tin; by changing the composition of the lacquer, however, it can be made to adhere quite well to tin provided, of course, that all of the oil or grease has been removed by washing with a lacquer reducer or some similar solvent.

It is true, of course, that even a lacquer made especially for tinware will adhere still better if the layer of tin on the tin plated work can be roughened or etched slightly before the lacquer is applied, so as to give the lacquer a better "toe-hold." There are sev-

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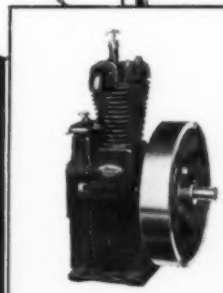
Force-feed lubrication positive and fool-proof, requires little care.

Efficient cooling system either air or water, makes a cool running compressor.

Bearings including crank pin bearing, of automobile design, adjustable for wear and easily removable.

Pressure control device reduces power consumption and is automatic in operation.

Worthington Feather Valve compressors require practically no attention other than periodic oiling.



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ALAKA gives your product the advantage of an unbeatable finish. It brings products home leading the field time and again. There is no mystery here. ALAKA comes first because years of experience and the choicest materials have gone into its manufacture, making for uniformity in the product and its performance.

ALAKA does not crack or peel, and retains the beauty of its finish in the hardest kind of use. Because its ingredients are properly balanced and the rate of evaporation carefully timed ALAKA sprays smoothly and easily.

Our Booklet, *Finishing Facts*, tells you all you want to know about good finishes. Send for it.

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Makers of ALAKA Lacquers

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eral chemical solutions which will produce this etched effect. Three such solutions are given below:

Solution No. 1

Dissolve one pound of copper sulphate crystals (blue vitrol) in a gallon of water; add to this solution two liquid ounces of sulphuric acid. Dip your tinware into this bath for two minutes and then rinse it thoroughly with clean water. As soon as the water has dried off, the tinware can be coated with lacquer. If not left too long in this solution the tinware will not be discolored.

Solution No. 2

Make a mixture of one gallon of nitric acid, three gallons of acetic acid and five gallons of glycerine. To this mixture add 9 gallons of water; dip the tinware in this mixture for five seconds and then rinse thoroughly in clean water. As soon as the water has been dried off the tinware can be coated. This solution discolors the tinware slightly but gives an etched effect which allows the lacquer to stick very well.

Solution No. 3

Make a 10 percent solution of nitric acid; dip the tinware in this for 30 seconds, then dip it in a 10 percent solution of sodium hydroxide, soda ash, or lye for 30 seconds to neutralize the acid. Finally rinse the tinware thoroughly in clean water to remove all traces of caustic. As soon as the water has dried off, the tinware can be coated with lacquer.

These two solutions etch the tinware and give it a silvery gray color if it is not left too long in the nitric acid bath. All of these solutions, of course, must be kept in earthenware containers or tanks made of duro iron or some other acid resisting material.

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of their new
Chemical Products Division
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of a full line of standard quality
Solvents and Chemicals
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Care should be taken not to leave the tinware in any of them too long, otherwise the coating of tin will be entirely eaten off and only the black iron will be left. By leaving the tinware in the solution just the right length of time, however, and promptly washing the solution off with water, an etched effect will be produced that will permit a good adhesion of lacquer.—R. L. Masterson.

French Varnish Too Lustrous

The concern for whom I am working uses a great deal of French varnish. When using the French varnish on small surfaces of a satin or dull finish job, the French varnish has a tendency to become bright after it dries down and leaves a very bright spot on a satin or dull finish, which is objectionable to a high-grade finish.

We are using a brush, which we call a "dulling brush," to make the French varnish dull after it has been applied, but it only remains dull for about 48 hours. Can somebody suggest a satisfactory method to satin or dull French varnish so that it will not become bright on satin or dull finish jobs?—D. B. M.

By the term "French varnish," we assume that you mean the familiar type of refined shellac solution sometimes known as French spirit varnish used for touching up rubbed-through spots or other defects in a finish on wood. This is primarily a solution of resin in a volatile thinner and contains no oil. Naturally it can not be dull rubbed in the same way that a dull-rubbing

IT'S A FACT

FILLERUB has so many advantages over all other filler wiping materials that you would not think of using anything else if you once try it.

Here Are a Few of It's Many Advantages---

- Reduces rubbing time 25%
- Has long useful life
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- Insures economy
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Read What This Concern Says . . *and remember hundreds others say still more—*

"We use FILLERUB because it lasts much longer than sea grass and is not nearly so dirty. It also removes excess filler from the surface a great deal better and with less labor. We recommend FILLERUB as the best material we have ever used for filler wiping."

BANTA REFRIGERATOR CO.,
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Get your sample of FILLERUB today and find out just what it will do. We will send you free a liberal sample, enough for a real job, if you'll send us this coupon.

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Kindly send full particulars and free sample of FILLERUB at once.

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DU-PROS SHELLAC

Sands Smoother With Less Sanding

The way a shellac sands depends upon the quality of the ingredients and the thoroughness with which the gums are dissolved.

The gums in Du-Pros Shellac are high grade, and they are so thoroughly cut that when you apply it, the shellac penetrates into the wood. Then, when you start sanding, you may rub as briskly as you like, without danger of burning. No other shellac sands to a glassy surface quicker and with less effort than Du-Pros.

Send for sample.
See for yourself.

JAMES B. DAY & CO.
1872 Clybourn Ave
CHICAGO
Manufacturers of
WOOD FINISHING MATERIALS

varnish can be dull rubbed, and it would have a tendency to show up with bright spots just as you mention.

It might be possible to dull down the French spirit varnish by mixing a quantity of finely-divided inert pigment, similar to that used for making dull-drying varnishes.

We believe, however, that a better method would be to replace the French varnish with one of the flat-drying lacquers or varnishes now on the market. This will give you a satin or dull finish on the spots touched up. Flat lacquers can be rubbed if desired to any degree of luster the same as a varnish can be rubbed.—I. F.

Lacquer Undercoat; Wood Filler; Tumbling

We are particularly interested in some suitable materials which we can use as an undercoating for lacquers—something we can tumble on, if practical.—B. N. Co.

Many paint and varnish manufacturers make a tumbling filler which is somewhat similar to a regular liquid wood filler that can be tumbled on handles and all sorts of wood novelties, air dried overnight and then coated next day with lacquer, without difficulty.

Most wooden novelty companies use this tumbling wood filler in the clear form, although some of them, where practically all of their work is done in black, buy it in the black shade so as to aid in the covering or hiding power of succeeding lacquer coats.

The method of using this tumbling filler is to place a quantity of the wood turnings in a tumbling barrel, then throw on a

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Wear the Willson Fume *and* Smoke Mask

Protects against spray, dust, lacquer fumes and other injurious odors in finishing work. Fits anybody comfortably.

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Easily Rubbed
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Jamestown Wood Finishing Co.
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STAINS FILLERS J C W F PAINTS

sufficient quantity of the tumbling filler so that as the tumbling barrel revolves, the wood turnings will be coated on all sides with the filler, but it will not be in sufficient excess to cause runs and sags to form.

After the work has tumbled for a sufficient length of time to thoroughly coat the articles, they are usually tumbled out on a wire screen or into some other suitable receptacle and separated slightly, one from the other, and allowed to air dry over night. If desired the filler can be force-dried in a few hours at 150-deg. F.

This filler, together with the tumbling action of one turning rubbing against another, fills the pores of the wood and stops absorption of succeeding coats, thus giving a smoother surface than could otherwise be obtained.—I. F.

Frosted Brown and Silver Gray on Oak

Can you advise us the materials required and the method of application to obtain the "Frosted Brown" and "Silver Gray" finishes on oak? Can this be done without lacquer, and if so how, and can it be done without spray and if so, how?

We are interested only in a very cheap finish.—T. W. F. Co.

The so-called "Frosted Brown" and "Silver Gray" finishes on oak can be obtained by the use of stain of the proper shade of brown or gray, applied directly on the bare wood and followed with a filling operation, using paste wood-filler which leaves a white or light gray pore.

After this, shading or blending can be done around the edges or

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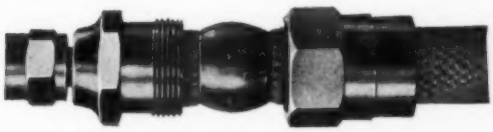

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Finishing Products of "Unquestionable Quality"

DOLAN'S "444" lacquer shading stains are demanded by discriminating buyers to obtain the delicate highlighting so much in evidence on luxurious pieces of furniture. Are popular for their smoothness in spraying and do not run or bleed.

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is recognized by the leading lacquer manufacturers as the superior plasticising medium for all types of lacquers—brushing, spraying and dipping.

It combines with nitrocellulose and acetylcellulose in varying proportions and with the widest range of gums.

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Colorless Odorless

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on other parts of the work by using a deeper shade of stain and wiping it out while still wet, so as to blend it in with the color first used on the bare wood; or a mixture of japan colors or oil colors can be used for the same purpose. Following that, a coat of white shellac or a pale varnish can be applied.

The above suggestions are for use where lacquer and spraying equipment are not available.

The customary method of obtaining frosted brown or silver gray finish is with the use of a colored lacquer sprayed on the bare wood, then filled with a white or light gray filler antiqued or shaded around the edges with a very thin colored lacquer and finished off with a coat of clear lacquer, or merely waxed and polished.

Of course, it is not absolutely necessary to have spraying equipment in order to get the advantage of using the lacquer color next to the wood, as there are now obtainable brushing lacquers which can be brushed quite satisfactorily on all but the very largest surfaces.

A coat of brushing lacquer of the proper shade of light gray or brown can be brushed on bare wood, then filled with light paste wood-filler and finished off with a coat of white shellac, followed by waxing. In this way all coats could be brushed.

Sometimes, for economy, instead of using a light-colored filler and then waxing, a combination wax and filler is used, which consists of the ordinary type of wax in which white pigment has been incorporated.—R. L. Masterson.

ZELLAC

Look at it from Every Angle

Why does Zellac appeal equally to (1) the Purchasing Agent, (2) the Production Manager, and (3) the Sales Manager?

1. Because Zellac can be purchased on the basis of real economy—highest lacquer quality at low prices, made possible by complete Zeller manufacturing control.

2. Because Zellac lacquers and lacquer enamels fulfill every production requirement in handling, applying, and economy of time and effort.

3. Because Zellac-finished products *can be sold better*—with less resistance and with enduring good will.

It all comes down to merit. You can prove this in your own case by following the advice of our lacquer experts—free to you on request.

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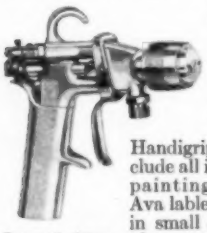
QUALITY of the finish is what the buyer sees. Speed is a shop consideration. Both are combined in Handigrip spray painting equipment.

With Handigrip you can do an hour's work in a few minutes and do it better.

Cup Gun

Balanced design relieves the strain of handling. The self-aligning retainer holds the nozzles in perfect alignment and insures perfect atomization. The spray is controlled by an automatic spring valve. There are many exclusive features of Handigrip equipment which make the quality finish of fine woods and metals a mechanical certainty.



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Handigrip products include all items of spray painting equipment. Avn lable separately or in small or large complete outfits.

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PLUMMER-HUFF COMPANY
NAPOLEON, OHIO

Prepared "Stripper" Cleans Racks of Baked Finishes

On page 68 of September INDUSTRIAL FINISHING there was an inquiry on cleaning varnished or japanned racks, and R. L. Masterson replied to this inquiry editorially by suggesting the use of caustic soda and by stating that a great many of the prepared cleaners on the market were largely composed of soda ash.

In the first place, the average stripper on the market is not by any means composed of soda ash. In the second place, there are several compounded strippers on the market that are cheaper and quicker to use than caustic soda. In the third place, one of your advertisers is recommending a special material for stripping japan, enamel and paint.—International Chemical Co.

Short Order Furniture Finishing

That it is possible to secure the benefits of modern equipment on small-lot work, is proven by the experience of the Campbell Shops in New York City. This concern has its own factory in Massachusetts where unpainted furniture is made—furniture that is retailed from one New York store, besides being sold from a catalog to buyers all over the country.

A factory employing a dozen men is operated in New York City, where special pieces of furniture are made up and finished. This, of course, is a poor location for a factory because of rents and labor costs, but the plant is able to show a profit because good equipment is used and the work is carefully systematized.

Fifty-nine years of paint making experience is your guarantee that Pegex Pyroxylin Finishes are of a quality which justify the Pee Gee trademark. Write for Pegex furniture booklet.

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Cleans thoroughly—without injury to the skin

Solusoap is a superior soft soap developed by scientists, after years of experiments, for specific use of lacquer finishers. It possesses the remarkable property of drawing lacquer, oil, color, ink, grease, etc. out of the skin almost instantly.

This is done without the use of any injurious chemicals, leaving the skin soft and smooth. Discriminating finishers wishing to have the hands cleaned thoroughly and quickly should return the attached coupon today.

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The Dependability of

Butanol

"To err is human"—but in the natural biological process by which Butanol is made from corn, the human element is eliminated in so far as the character and quality of the resulting product are concerned. No tricky or dangerous substances—no insidious film-destroying impurities — can be present even in the crude mixture from which Butanol is distilled.

This inherent advantage of Butanol is particularly important in the manufacture of lacquer, where mysterious failures, due to unproven solvents, may appear months after the lacquer has been applied.

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INDUSTRIAL FINISHES

UNDERCOATS for Enamel and Lacquer

Are unsurpassed for smoothness of finish.
Will stand any lacquer without "popping."
A generous trial sample sent on request.

The Sargent-Gerke Co.

Producers of
Lacquers, Enamels and Undercoats
INDIANAPOLIS, IND.

Odd Line of Furniture

From the finisher's standpoint, the factory is of interest because of the combination of old and new methods on small-lot work. Sets of furniture for tea rooms along the roadside, are among the chief things produced; these are invariably finished in brilliant colors that appeal to tourists—greens, blues, yellows, etc., with striping of marked contrasting color.

Another line of products includes bungalow furniture. A bungalow order may run as small as three pieces—just two chairs and a table—or it may include bedroom and dining room sets for a very extensive house.

The Finishing Problem

The problem always is, "how to finish these few pieces at a price to compete with department stores and catalog goods." This is accomplished successfully by the use of a modern spray equipment for all body work, and by striping for ornamentation.

So far as is possible, orders are grouped according to colors so that the spray operator can put on the blues, let us say, while he has the blue can attached to his gun. In this way, he runs through a number of pieces with all the speed of a production shop. He is doing the work with the same speed as the larger factory that manufactures department store goods. At the same time, there is a local advantage in that quantities are small and handling costs are light. Storage costs are light also because but few pieces are made and these few are sent out of the place as soon as the finish is hard enough to allow handling.

Put Another String In Your Bow!

Now is the time to fortify yourself with another reliable source of supply for your

Soluble Cotton

Write today for free samples and check them up before the lacquer season gets into full swing.

All Grades
All Viscosities

Nixon Nitration Works

Dept. F. Nixon, N. J.

"Nitrators since 1898"

When writing for samples please state quantities, grades and viscosities desired.

YOU
CAN REDUCE
Finishing Costs
40%
By Using

FINISHEEN

A MARVELOUS

NEW FINISH—Combining the Qualities of SHELLAC - LACQUER and VARNISH.

Tough—lustrous—requires little sanding—dries fast—will spray-brush or dip.

A REAL HIGH CLASS FINISH

Send for a working sample—give it a fair test and the result will more than prove our claims.

THE
MARX & RAWOLLE
CORPORATION
Est. 1849

125 Ann St. Chicago
551 Fifth Ave. New York

Changing Colors

When it is not possible to group orders according to colors, the operator steps to one side of the booth where a rack holds the cans of other colors and where there is a solvent tank in which he can flush out his gun in a few seconds. An entire change from one color to another may require only two or three minutes, which certainly is not a heavy charge against a job.

A priming coat is given to all unpainted work. Following that, a hand rub takes off anything that smacks of roughness. The second coat is sprayed on in a similar manner, using either dull or gloss as the customer may desire.

Advantage of Stripes

Campbell finishing designs run almost entirely to stripes, rather than to ornaments and broad splashes of contrasting colors. By sticking to stripes, an expert in this line is kept busy all the time, at work which he can turn out with great rapidity. The same brilliant stripes form decorative schemes for chairs, tables, beds and dressers—a scheme that appears to be highly satisfactory to customers.

The combination of methods worked out and mentioned above has proved profitable under trying conditions. It is worthy of imitation by others who would go after small-lot work in an attractive field.—H. A. D.

Leading men in widely divergent fields agree that the reduction of variety and the simplifying of industrial practice, will decrease stocks, production costs and selling expenses and at the same time increase turnover and promptness of delivery.

KROEGER BROS.

MANUFACTURERS
SINCE 1887

WOOD FILLERS
STAIN POWDERS
STAINS

LET US MATCH MATERIALS YOU ARE NOW USING AND SUBMIT SAMPLES WITHOUT OBLIGATION OR COST.

882 McKIM ST., BALTIMORE, MD.

Superior Service and High Quality

STAINS—FILLERS—SHELLACS

600 Flat Lacquer

Lacquer Fillers **Lacquer Enamels**

Shading Stains **Uniforming Stains**

Samples and Prices on request

INDIANAPOLIS PAINT & COLOR CO.
INDIANAPOLIS

Enamels
Lacquers
Varnishes

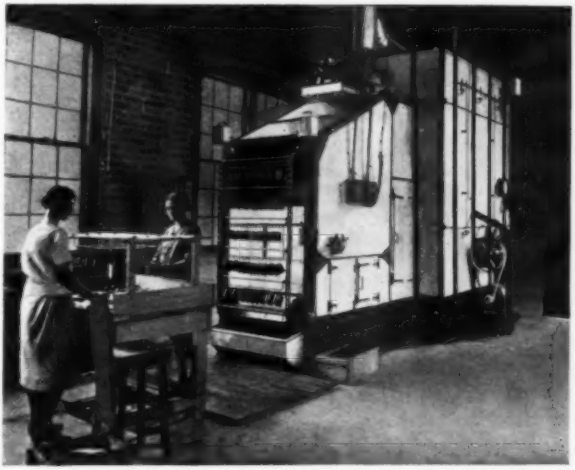
A dull black Baking Enamel that has an extremely hard, durable surface and at the same time an exceptionally tough and flexible film is one of our latest developments.

May we send sample for trial?

The KAY & ESS Co.
DAYTON, OHIO

This Section is devoted to the application, baking and polishing of finishes to be dried in ovens.

Baked Finishing



THIS remarkable oven dips and bakes over 40,000 small hardware parts each day. Saves Labor Cost, Floor Space and Fuel. Gives Superior Finish. Ask for instructive literature.

The PAUL MAEHLER COMPANY
INDUSTRIAL OVEN BUILDERS
1230 W. LAKE ST. CHICAGO, ILLINOIS

Above appears a shallow tank of volatile liquid just after it had burst into flames. At the right the same tank a few seconds later—the fire smothered by the Grinnell Automatic Foam Tank.

Dip Tank Fire Hazards

PLANTS which utilize the dip tank method of finishing are offered a quick, automatic protection in case of fire.

It is the Grinnell Automatic Foam Tank, a device combining two dependable means of combating fire—the Grinnell Automatic Sprinkler Head and Foam.

When a fire starts, the quick-acting sprinkler head opens immediately—a stream of foam flows from the tank, spreads over the flaming liquid and instantly smothers the fire.

There are various methods of installing Grinnell Automatic Foam Tanks, according to the position of apparatus used in dipping. Drawings of typical installation and full details are given in free booklet. Write for it to Grinnell Company, Inc., 311 W. Exchange St., Providence, R. I.

GRINNELL COMPANY

Modern Japanning Practice

Recommendations for the construction and arrangement of dipping tanks, strainers and drain boards, the cleaning of japan and the hanging up of freshly-dipped articles

By T. E. Moorefield

IT IS advisable to construct the japanning vats or dipping tanks of a material that is not affected by japan. Galvanized iron is most frequently used for this purpose. Each tank should be so shaped and fastened with rivets and solder as to be perfectly liquid tight, and the inside should be as smooth as possible. It is well to have a flare around the edge of the tank to return any splashings to the tank interior, instead of allowing the japan to be spilled on the floor.

Deep, narrow tanks should be used instead of wide, shallow ones, as the deep tanks catch less dirt and dust; and any dirt that does get into the japan will have a better chance to settle to the bottom. It is well to have a fine screen in the tank 6 or 8-in. from the bottom, so that the articles being dipped can not touch the bottom and stir up any settlings. Covers should be kept on the tanks when they are not in use. Separate tanks should be used for the first coater and the finishing materials.

The dip tank should also have, at one end, a sub-strainer that extends down to within a foot of the bottom of the tank. This strainer should be covered with a fine-mesh copper screen that will catch all small particles when fresh japan or reducer is added to the tank, and also catch similar particles from the japan that has been collected from the drain board and put back into the tank through this sub-strainer.

By having the strainer below the surface of the japan, bubbles will not form when new material is added. Any bubbles that are present in the liquid are likely to appear on the baked product and cause rejection of the piece.

Construction of Strainer

Where it is not desired to construct a permanent strainer of this sort, a portable one can be made at low cost. The writer's experience has been that satisfactory results can be obtained by constructing a wood or metal-framed strainer in such a way as to give a large straining surface. About three feet square is a good size, although the strainer can be made larger or smaller as conditions may warrant.

To make the straining surface, tack on a piece of coarse-mesh wire—one which has meshes of ¼-in. or even larger, will be satisfactory. Over this lay a piece of clean cheesecloth; on top of it place a layer of absorbent cotton, cotton batting, or trimmers' wadding; then, on top of that, lay another piece of clean cheesecloth.

Care must be taken to see that no holes are left for the japan to run out without going through the cheesecloth and cotton. It is advisable to build the strainer reasonably deep, so that the weight of the added depth of liq-

uid will force the material through the strainer that much faster.

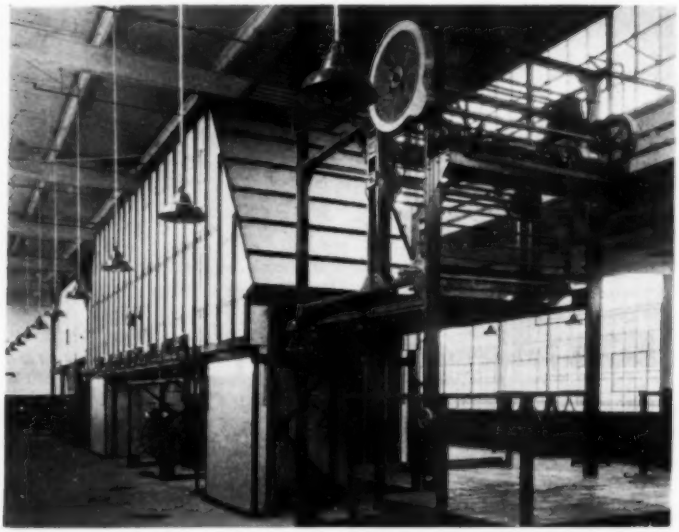
Cleaning Japan

If a centrifugal machine is used to clean the japan, care must be taken to have the speed so regulated that only the dirt, and none of the constituents of the japan itself will be thrown out. It is especially important to make sure that the speed of such a machine is not too fast when cleaning a first coater or primer otherwise the pigment may be thrown out, with the result that the cleaned material will have much less hiding properties.

Whenever japan shows any tendency of being dirty the tank should be emptied at once; then, carefully cleaned by washing with naphtha, and the japan strained back into it again. If the articles are always clean before being dipped, if the room is clean, if the tanks are kept covered when not in use, and if all fresh japan or reducer is added to the tanks through a strainer, it will not be necessary to clean the tank very often.

Size of Tanks

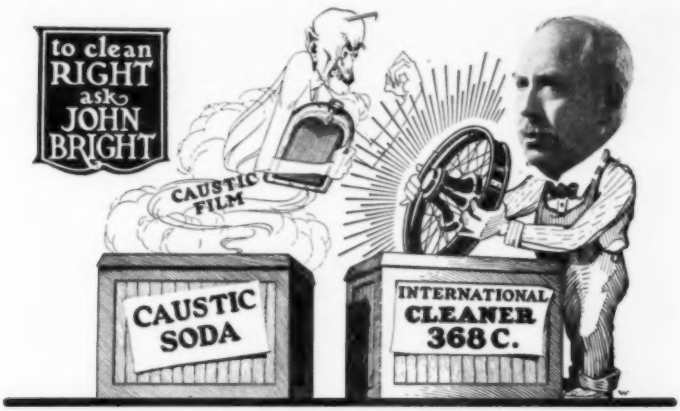
The dip tank should be so constructed that the largest articles can be fully immersed in one



The second step after washing—the applying of primer by automatic dipping after being received in continuous flow from wash machine.

This equipment is 90-ft. long and 21-ft. high over all, and is indirect gas fired, with thermostatic control and individual gas supply system and control.

Conveyor has permanent bars on every pitch of 6-in. steel chain and is driven by a straight line power plant, direct from motor to head shaft with a variable transmission built in—very convenient to access without element of risk. All greasing of interior chain sprockets at any level or height is obtained by a high-pressure lubricating system with its nozzles on a working level near factory floor. As observed, these types of ovens contribute to useful storage and isle space under them and out of the way space for fire protection devices, etc.



John Bright Insures Perfect Japanning with INTERNATIONAL 368C

Faulty japanning and painting is often due to the fact that a caustic film is left on the metal before the japan is applied. This caustic film combines with the oils in the japan causing buckling, cracking and blistering after baking.

Therefore, the ideal cleaner to use must not leave that dangerous caustic film. And, of course, it must remove every trace of oil — rapidly, surely and economically.

If you want perfect japanning, let me send you a trial lot of International No. 368C. No cost if it doesn't beat anything you ever used.

Internationally yours
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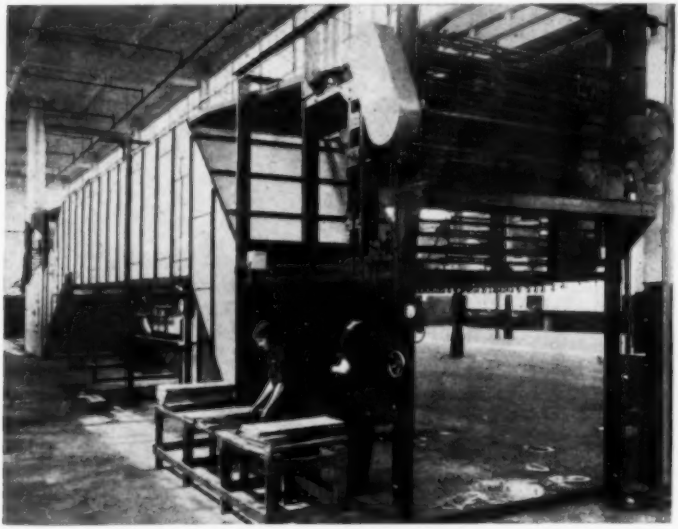
PHILADELPHIA ----- PENNA



Third step in handling mouldings in continuous flow, conveyed to it from primer ovens using steam conveyed to air as heating medium, with automatic temperature control to one degree plus or minus. Also equipped with straight-line power plant and permanent hooks. Delivery, 100 mouldings per minute.

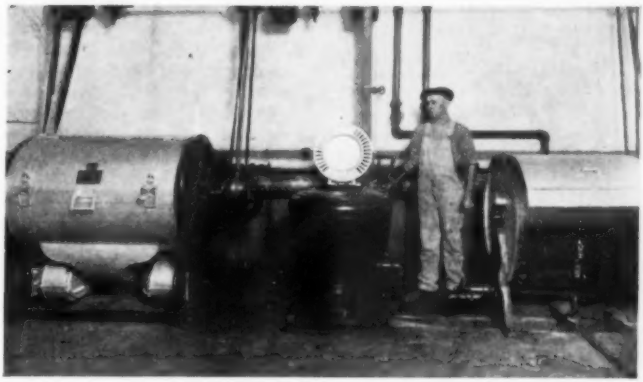
movement, without shifting it to two or three different positions to get a satisfactory coating. Both in the submerging and drawing-out operations, care should be taken to avoid disturbing the japan, so as not to stir up any settlings in the bottom or cause any bubbles on the surface. The article or set of articles should be drawn out of the japan with one movement and hung at once with the proper end up, to obtain a complete, even flow of the japan.

Hanging Dipped Articles

Care must be taken to hang each article in such a way as to obtain a satisfactory flow of japan. The best position for a given object can be determined only by experimenting. In general, the obscure parts of the article should hang at the lowest level, as any sags or runs are most likely to develop there. Also, this will cause the drip-points to be in a position that will not affect the value of the finished product. For example, a front fender should be hung with the crown part up and the apron part down, and at such an angle as to allow the japan to flow off smoothly.

All dipped articles should be allowed to hang over the drip board from 15 to 30 minutes after being dipped, before going into the oven, to allow the japan to flow off freely and to set sufficiently to lose its flowing properties. Much trouble is caused by rushing the work into the oven too quickly.

This remarkable rag-washing equipment saved its cost and $1000 more... *in a single year*



This "American" equipment has saved its cost many times for the Durant Motor Company. Wiping rags and all other washable materials are washed and dried—returned to service soft and clean, ready for immediate use.

IN November, 1923, the Durant Motor Company, Oakland, California, installed the "American" laundry equipment for washing and drying wiping rags. At that time their cost for wiping rags was 15 cents per car.

In 1924 the cost dropped to 6 cents. In 1925—3.9 cents! In 1926 a change in operating methods necessitated the use of more wiping rags. Yet the cost increased only one cent per car.

The total saving in 1926 over 1923 exceeded the cost of the equipment by almost one thousand dollars!

And you can taper down your wiping rag costs with this specialized equipment. A letter will bring the facts to your desk.

The American Laundry Machinery Company
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For "looks"

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PE-CO-LAC

The Dependable Pyroxylin

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produces a finish that is unsurpassed for both appearance and hard wearing qualities.

To add beauty and dignity to your products—use PE-CO-LAC. To insure permancncy—use PE-CO-LAC.

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3rd and Sedgley Streets
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Est. 1862 Inc. 1911
By Smith Bowen

Prevents Rust and Corrosion

Fabricators who face the task of preventing Rust and Corrosion will welcome the news that there is now on the market a preparation that will prevent these two evils, viz.: "Solvent" Gum Oil.

"Solvent" Gum Oil is a vegetable product which is used with any pigment as you would use oils, turpentine and dryers in mixing same, but none of which are necessary when using "Solvent" Gum Oil.

Manufacturers of industrial products also find same very valuable as a sealer against moisture, acid or sulphur fumes, as well as producing a rich and lustrous finish wherever applied.

This preparation when used with lacquers, or as a vehicle for aluminum or other bronze powders is unsurpassed. It is easy to brush or spray.

For particulars write the DETROIT UNIVERSAL SOLVENT COMPANY, Office 1622 Dime Bank Building, Detroit, Michigan—Adv.

The Drip Board

The drip board should be so constructed of galvanized iron or other smooth metal, as to allow the drippings to flow into a container placed at its end. To accomplish this, the drip-board will need to be at such an angle as to allow easy flow of the drippings, thereby preventing them from collecting and hardening on the board. The drip boards should be washed down each night with naphtha or some suitable solvent. This will keep them clean and in good condition for service.

Under no circumstances should the drippings be returned to the dip tank without first being strained, as much dirt will be added to the japan by this arrangement. Suitable racks should be provided over the drip-boards on which to hang the articles while dripping occurs.

The drain board should be as near the oven as possible, not only to save time and labor in getting the work from the drain board to the oven, but also to lessen the chances of stirring up dust while moving freshly-coated articles. Of course, this does not apply so much to conveyor or endless chain ovens, but even here the shorter the distance between the drain board and the oven, the cleaner the work.

Material waste in industry, greatly affects the economic life of the workers. As waste detracts from the earnings of industry, so it detracts from the wages of employees.

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Let us develop an Enamel to suit your particular needs.

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VOL. III

Industrial Finishing

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Removing Lacks from Lacquers—II

Defining modern lacquer, revealing what materials it is made of, explaining how some lacquers have lacked certain qualities, and pointing out what is required of a satisfactory lacquer

By R. L. Masterson

THE FIRST five classes of raw materials — nitrated cotton, nitro-cotton solvents, gums or resins, dilutents, and softeners or plasticisers — which were described last month, are the principal ones used in the manufacture of clear lacquers. For enamels or colored lacquers a sixth class of raw materials—pigments or coloring matter—must be used. In automobile lacquers it is necessary to use only the highest grade of pigments, similar to those used in japan colors, color varnishes and enamels.

Careful selection of the pigments must be made, however, for a few of them react with lacquer and are not at all suited. All colors used must be nearly fast to light and as solid covering as possible. Pigments serve a very important function in lacquers which are exposed to sunlight, in that they reflect the actinic rays of the sunlight which quickly break down many clear lacquers that are very tough and durable under inside conditions.

The pigment is added in different ways according to the results desired. In some instances it is

rolled into the heavy nitro-cellulose solution between huge steel rollers which are kept at a uniform temperature. After the pigment has been thoroughly incorporated, the so-called pigmented, colloided nitro-cotton is dissolved again and the proper gum solutions and other ingredients are added.

Another method is to grind the pigment in the regular way on stone mills in special oils; this pigment base is added to clear lacquer of the proper type to produce the enamel. Still another method is to grind the pigment with certain portions of the finished lacquer or with reducers in huge pebble mills. There are other methods in use also. In any case the pigment must be thoroughly ground and carefully incorporated into the other ingredients. Each type of grinding has its advantages for incorporating color matter in the lacquer materials.

Summary of Ingredients

To summarize the types of raw materials used and the purpose of each, let us briefly review what has just been explained. A true lacquer is made of six ingredients and each of these is desirable for the following reasons:

Nitro-cellulose—to give waterproofness, hardness, print resistance, and durability.

Solvents—to dissolve the nitro-cellulose and to give quick drying, together with ease of application and freedom from blushing.

Gums or resins—to add thickness of film and adhesion to the nitro-cellulose solution.

Dilutents—to dissolve the gums or resins and lower the cost of the lacquer.

Softeners or plasticisers—to

You can use Pylakromes —with certainty—

For all work that requires Fast to Light

ANILINE DYES OR STAINS

WATER WALNUTS
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Positively will not bleed under shellac or lacquers

Pylakromes — Our prices save you money. Send for free samples.

PYLAM PRODUCTS COMPANY
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JUST OUT!!
new and practical

A detailed study of modern methods of automobile painting; carefully written in non-technical terms.

This book contains much useful information, both for the shop owner and finisher; explaining methods of preventing checking and cracking, water spotting, peeling, chipping, flaking and many other helpful ideas.

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16 CHAPTERS ..... PRICE $3.00

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INDUSTRIAL FINISHING
802 Wulsin Bldg., Indianapolis

EASY NOW TO REPAIR DAMAGED FINISHES

Permanent repairs are easily and quickly made with Campbell's Stick Shellac. No use to lower prices because of damage—or to incur big expense of refinishing.

CAMPBELL'S STICK SHELLAC

Campbell's Stick Shellac easily restores scarred and scratched finishes to perfect condition. It is melted into the hole, dent or scratch and then rubbed down and polished. It is truly an ideal way to economically repair damaged finishes.

UNIVERSALLY USED

A color card of Campbell's Stick Shellac will be sent free to anyone upon request. Shows actual samples of the Shellac and the range of 54 different colors. Write for one today.

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1007 W. 8th St. Kansas City, Mo.

$74 "EUREKA" $74
CURTIS AIR COMPRESSOR

Size 2½" x 2½", 10" x 30" Air Tank, Gauge, Safety Valve, Drain, ½ H.P. Motor, Belt, Electric Cord and Plug. Exactly as shown. Twice the capacity of other makes.

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Eureka Pneumatic Spray Co.
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We also make a complete line of Air Compressors, Spray Guns, Booths, Exhaust Fans and Equipment.

counteract the brittle effect produced by the addition of gums and to restore the original toughness to the nitro-cellulose solution.

Pigments—to give hiding power or color to the lacquer wherever needed, as well as to reflect the actinic rays of sunlight and make the coating more durable under outside exposure.

When the proper type and the proper quantities of these raw materials are combined in the right manner, a truly remarkable finishing material is produced. That every manufacturer has not found the secret of properly using the materials available for making lacquer is brought out by the many so-called lacquers now on the market under various trade-marked names. Many of these do not have the proper spraying, drying and rubbing properties, nor the elasticity, life and durability.

Difference in Lacquer and Varnish

Lacquer differs greatly from varnish in many respects. Varnish dries by a combination of evaporation and oxidation. During the first few minutes after varnish is applied, the volatile matter escapes into the air and the varnish takes on a "tack" or sticky feeling. From this point the drying of varnish is largely a matter of the oils and gums absorbing oxygen from the air to form a hard mass.

Unless prevented by special means, this oxidation process does not stop when the varnish has become merely hard and dry, but continues until the saturation point is reached when most of the oil that originally gave toughness to the film has been converted into a dry, hard mass.

On the other hand, lacquer

Everything for the Finishing Room

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"The Paint People"
164 W. Lake St. CHICAGO

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Strand

Power Filler Rubbing Machine

Flat Surface Work Only

Do away with the old strongarm method of rubbing in wood fillers. You can do a better job with less effort with this machine.

Furnished floor type as illustrated or mounted on suspension base with adjustable tie rods. Arranged with cord switch and plug for operating from the lighting circuit.

½ H. P. Motor.

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Hand stirring is old fashioned

OBSOLETE and INEFFICIENT

The portable mixer assures constant uniformity of lacquer, paint, enamel, Duco, varnish, etc. No evaporation—no loss of operator's time mixing spray cup at a time—no guess work about materials being thoroughly mixed—and many other advantages.

USE PORTABLE MIXERS

They effect savings by the proper conditioning of materials before application, and accomplish many other feats which make them a profitable investment. The installation of mixing tanks is a progressive move which many concerns have already recognized. Get further facts, without obligation—ask for catalog today.

R. L. VILAS

278 Whalley Ave., New Haven, Conn.

SAVE BY SAVING

for toy finishers
for automobile builders
for machinery painters

(for all finishers)

for furniture manufacturers
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FOR PAINT SPRAYING AND FINE DUST

Easy Breathing Better Protection Safety

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Made especially to meet all spraying conditions. More protection. Comfortable. More service. Tested dustpruf filter that honestly protects. Sanitary. Can be cleaned after using. Other Pulmosan paint spray Respirators include sponge chemical cartridge and attachment for air line hook up.

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380 Jay Street Brooklyn, New York

dries by evaporation alone. None of the raw materials used in its manufacture take on oxygen from the air. Within 30 minutes or so the film has dried to where it can be handled, and after a few days practically all the volatile materials have evaporated, leaving a hard, tough film that is not affected by moisture or climatic changes.

Lacquers made of the proper combination of the right quantity and types of raw materials spray easily, level out readily, dry quickly and evenly. The dried film does not peel, crack, check nor chip; it withstands mud, water, ice, sudden changes of temperature, road tar, gasoline, lubricating oil, battery acids and many other chemicals, and at the same time is hard, tough and permanent.

What More Is Needed

In short, properly made lacquers, today, practically overcome all the "lacks" which lacquers formerly had, but there are a few difficulties to be solved yet. We need cheaper solvents and lower cost nitro-cellulose to reduce the cost and consequently the selling price of lacquers. We need lacquers which can be brushed as readily as sprayed.

We need lacquers which will level down so smoothly that no rubbing or polishing is required. We need lacquers that will adhere as well to metal directly as when applied over proper primers. We need lacquers which will deposit a greater thickness of film in one application. In brief, we need many qualities which will make it easier and cheaper to use lacquer.

Much progress is being made on all these and many other

DON'T REMOVE
CHECKED VARNISH

KNITTEEN RESTORING VARNISH

WILL SAVE THE OLD FINISH

Brushed on over the old varnish scientifically "knits" and welds the old varnish together, closing all CRACKS and CHECKS permanently, at the same time brings back the life, color and beauty of old varnish on fine

Pianos, Furniture, Cabinets, etc.

A gallon will cover 400 sq. feet

PRICE $5.00

Trial quart sent postpaid $2.00
Full instructions

The Corlear Products Co., Inc.
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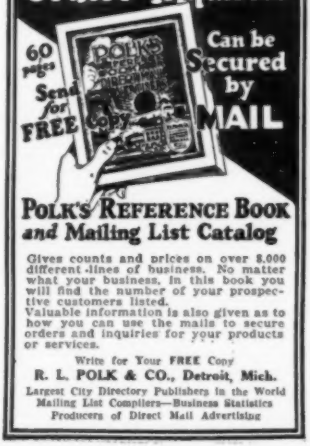
Orders - Inquiries



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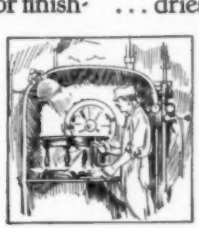

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(76)

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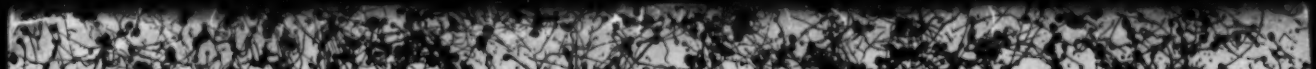
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